

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 5.Sep.02	3. REPORT TYPE AND DATES COVERED MAJOR REPORT		
4. TITLE AND SUBTITLE PRICE-BASED ACQUISITIONS: EFFECTIVELY TRANSITIONING TO MORE BUSINESS ORIENTED COMMERCIAL PRACTICES		5. FUNDING NUMBERS		
6. AUTHOR(S) 2D LT ROHE CHRISTOPHER W				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) HARVARD UNIVERSITY		8. PERFORMING ORGANIZATION REPORT NUMBER CI02-527		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) THE DEPARTMENT OF THE AIR FORCE AFIT/CIA, BLDG 125 2950 P STREET WPAFB OH 45433		10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION AVAILABILITY STATEMENT Unlimited distribution In Accordance With AFI 35-205/AFIT Sup 1			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)				
20021029 028				
14. SUBJECT TERMS			15. NUMBER OF PAGES 56	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT	

Price-Based Acquisitions:

**Effectively transitioning to more business oriented
Commercial practices**

Submitted To:

Mr. Richard K. Sylvester

Deputy Director, System Acquisition



Prepared by:

Christopher W. Rohe

**Candidate for Master in Public Policy
John F. Kennedy School of Government, Harvard University**

And

Benton W. Shrewsbury

**Candidate for Master in Public Policy
John F. Kennedy School of Government, Harvard University**

Advisor: Professor Stephen A. Kelman

PAC Leader: Professor David Lazer

April 2, 2002



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ARE THOSE OF THE AUTHOR AND DO NOT
REFLECT THE OFFICIAL POLICY OR
POSITION OF THE UNITED STATES,
DEPARTMENT OF DEFENSE, OR THE U.S.
GOVERNMENT**

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AFMC	Air Force Materiel Command
AMRAAM	Air-to-Air Missile
AUPP	Average Unit Procurement Price
B2B	Business to Business
CAS	Cost Accounting Standards
C&L	Coopers & Lybrand
CMI	Commercial-Military Integration
DAPP	Defense Acquisition Pilot Program
DARPA	Defense Advanced Research Project Agency
DFARS	Defense Federal Regulation Supplement
DoD	Department of Defense
DOSD	Deputy Secretary of Defense
DSMC	Defense Systems Management College
EDI	Electronic Data Interchange
FAR	Federal Acquisition Regulation
IDCC	Integrated Dual-use Commercial Companies
IPT	Integrated Product Team
JASSM	Joint Air-to-Surface Stand-Off Missile
JDAM	Joint Direct Attack Munitions
JTR	Joint Travel Regulations
KSG	Kennedy School of Government (Harvard)
MAJCOM	Major Command (USAF)
Mil-Specs	Military Specifications and Standards
Mil-Std	Military Standard

MPP	Master in Public Policy
OSD	Office of the Secretary of Defense
OT	Other Transactions
OUSD(AT&L)	Office of the Under Secretary of Defense for Acquisition, Technology and Logistics
OUSD/AI	Office of the Under Secretary of Defense for Acquisition Initiatives
PAC	Policy Area of Concentration
PAE	Policy Analysis Exercise
PBA	Price Based Acquisitions
POC	Point of Contact
R&D	Research and Development
RFP	Request for Proposal
ROI	Return on Investment
SOW	Statement of Work
SPO	Systems Program Office
TINA	Truth in Negotiations Act
TSWG	Technical Support Working Group
WCMD	Wind Corrected Munitions Dispenser
USD(AT&L)	Mr. E.C. "Pete" Aldridge, Under Secretary of Defense for Acquisition, Technology and Logistics
USG	United States Government

This Policy Analysis Exercise (PAE) could not have been possible without the continuous support of many key figures in hi-tech commercial firms, traditional government contracting firms, and firms exiting the defense industry. Many professionals took countless hours out of their busy schedules to speak with us, return our calls, and fax/mail critical information on company standards, practices, and experiences. We graciously thank all of you for your cooperation, patience, and insightful comments.

In particular, we would like to briefly mention several people that were most helpful throughout the process, but regret that we cannot acknowledge all those involved as a result of our non-attribution policy. Professor Steve Kelman, our PAE advisor, provided much need technical/academic expertise, real world knowledge, and commercial points of contact (POC). Without Professor Kelman's guidance our PAE never would have come to fruition. Our Policy Area of Concentration (PAC) Seminar leader, Assistant Professor of Public Policy David Lazer spent numerous hours with us offering professional guidance, direction, and support. Mr. Terry Little, former JASSM Manager and current director of the newly formed Air Force Acquisition Center of Excellence, offered his unique and "out of the box" expertise as a distinguished champion of acquisition reform. Professor Ira Jackson, Director of the Kennedy School of Government's Center for Business and Government, opened his schedule and Rolodex to us at a critical time in our research process.

Major General William Bond, USA, Ms. Barbara Brygider, Mr. Dick Brown, Ms. Carol Covey, Ms. Deidre Lee, Ms. Donna Richbourg, Colonel Mike Brown, USA, Captain (select) Gregory Sevening, 2Lt Bruce Clarke, 2Lt Chris Nielsen and 2Lt Erik Martin were extremely generous with their time and provided valuable insight on current and past acquisition initiatives and a working level knowledge of the DoD contracting, acquisition, and government procurement process.

Our PAE client, Mr. Richard K. Sylvester, Deputy Director, System Acquisition, graciously gave us much of his time and went out of his way to put us in touch with key individuals within OSD, the government acquisition world, and the private sector.

Our PAE would not have been possible without the help and support of all of the aforementioned individuals. *Thank you.*

Central Questions

This report addresses the following questions for the Office of the Director, Acquisition Initiatives:

I

How do commercial companies establish fair and reasonable prices in the absence of competition with respect to research and development/high-tech applications?

II

What are the barriers to entry and what reforms are necessary to attract more non-traditional commercial companies to the DoD acquisition system?

III

How do commercial companies establish and foster cooperative, long-term supplier relationships with respect to research and development/high-tech application contracts?

Background

Commercializing and reforming the Department of Defense (DOD) acquisition process is *paramount* to preserving the national security of the United States. A healthy and competitive U.S. Defense Industry lends itself to a well-equipped and capable combat force.

Despite current budgetary increases and a focused emphasis on readiness, the U.S. military recently experienced a "13-year-long trend of real defense spending decline," marking "a 38 percent real reduction in spending from defense budgets in the mid-1980s."¹ The real dollar budgetary decline and a push for quicker deployment of cutting edge technology highlight the need for a more efficient and effective DoD acquisition system.

However, critical, high-value, military specific, sole-source procurements are often negotiated as cost-based contracts. In order to adapt to a changing defense environment, the DoD has explored alternative contracting processes such as Price-Based Acquisition (PBA), wherein "price" is established on a variety of flexible conditions.

Regulatory, cultural and structural challenges confront the DoD in its efforts to attract non-traditional defense contractors to the prospect of conducting business with the DoD through processes such as PBA.

As is such, this analysis presents major findings and puts forth recommendations with respect to the regulatory, cultural and structural challenges facing the DoD in its efforts to attract non-traditional research and development/high-tech applications.

¹ National Security Report, "U.S. Budget: Walking the Tightrope Without a Net" April 1997. pg1

Major Findings

A survey, formulated with respect to the three central questions listed previously, of numerous commercial companies normally disassociated with the DoD or classified as non-traditional defense contractors revealed a number of concerns with respect to contracts linked to DoD interests:

I

1) DoD Sophistication: With respect to research and development, a number of commercial firms expressed a concern with the internal capacity of the DoD to properly evaluate labor rates and define the value of potential research and development breakthroughs. Put frankly, many within commercial industry do not believe that the DoD has the sophistication that other commercial companies possess and require for contracts associated with research and development.

II

2) Intellectual Property: Many commercial firms expressed explicit concern with the manner in which the DoD governs its rights to intervention and oversight of research and development contracts regarding intellectual property. A number of commercial firms are absolutely opposed to contracts with the DoD that are governed by the current intellectual property statutes.

3) Excessive Contract Participation Conditions: The regulatory and structural requirements mandated by statute and the cultural conflicts between commercial industry and DoD contracting officers are debilitating

impediments to research and development contracts. In general, many commercial companies would often rather do business with anyone else besides the DoD. Furthermore, apart from situations of fundamental national security, research and development business ventures with the DoD are often characterized as simply not profitable enough for non-traditional defense contractors to dedicate the time and resources.

III

4) Adversarial Relationship: A number of the commercial companies interviewed throughout the research process expressed a concern that the DoD was not interested in long-term, mutually beneficial relationships. Ultimately, a lack of informal communication results in mistrust towards the DoD on the part of smaller commercial companies, constraining potential partnerships.

Recommendations

Based upon the major findings listed above and a desire on the part of the DoD to adopt more commercial practices in the realm of research and development, this report puts forth the following recommendations (with respect to the questions posed) to successfully attract more non-traditional defense contractors:

I

1) Develop a Technical Expertise: If the DoD hopes to equitably operate with commercial firms, it must first develop an expertise with regard to the pricing nature of research and development.

Outmoded data and ill-trained personnel hamper the research and development process.

2) Train a Cadre of Negotiating Experts:

Assuming the DoD is able to operate outside of the normal environment that currently constrains its flexibility, individuals trained in aspects of negotiation are imperative to a healthy relationship between the DoD and its commercial partners. Effective negotiators making use of cogent data will be better suited to make decisions about the progress of specific projects.

II

3) Make Greater Use of "Other Transactions" and Pilot Programs:

Currently, the DoD is severely hampered by structural and regulatory requirements. Commercial industry is characterized by flexibility and change. Apart from a complete reversal of government statute, the DoD can only hope to attract non-traditional, high-tech firms through the use of exceptions, like Other Transaction agreements and "pilot programs," which allow for freer business practices.

III

4) Build Strategic Partnerships: The DoD cannot afford to approach commercial companies with contracts that do not provide mutual benefit. Research and development contracts within commercial industry are characterized by trust and understanding, developed through informal communications, and fostered by state-of-the-art technology links. Research and development/high-tech applications are inherently risky and do not provide a

guaranteed payoff. The DoD must nurture its business partnerships or technological benefits will prove less fruitful and future partnerships will prove more difficult to manage.

Conclusions

As with any major institutional change, these recommendations do involve risk. In particular, the DoD faces three issues before the Department can institute reforms on the road to *acquisition excellence*:

- 1) Can the DoD transition to a more commercial way of doing business?**
- 2) If the DoD embarks on this journey of reform will there be a supply of hi-tech, military specific R&D to meet the demand?**
- 3) Is it solely the responsibility of the DoD to reform and change the way it does business?**

With respect to these questions we have concluded that the assumption of the aforementioned risks are worthwhile. First, the DoD's desired transition to commercial best practices is possible as proven by the overwhelming success of previous pilot programs such as JDAM and JASSM. Second, if the DoD successfully embarks on this journey there will be an increased supply and interest from non-traditional defense contractors in military specific R&D as indicated by our interview findings. Third, the responsibilities for reform do not solely lie with the DoD. Lastly, these reforms will not tarnish the department's current relationships with traditional defense contractors.

In the end, we feel that more study is needed on the inherent risks involved with implementing the proposed reforms. However, according to our research, the aforementioned recommendations are not only plausible, but also necessary to maintain the DoD's role as the greatest military force on the planet.

The Client

Our client, Mr. Richard K. Sylvester, Deputy Director, System Acquisition, works within the Office of the Director, Acquisition Initiatives. The Office of the Director, Acquisition Initiatives supports the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD (AT&L)) in all matters relating to DoD acquisition systems and research and development (see appendix A for organizational chart).

Specifically, the office helps to “establish and publish policies and procedures governing the operations of the DoD Acquisitions System and the administrative oversight of defense contractors.”² According to Mr. E.C. “Pete” Aldridge (USD(AT&L)), this office has recently had a change of focus moving away from

“acquisition reform” to “acquisition excellence...concentrated on implementing acquisition reform initiatives.”³ Secretary of Defense Donald H. Rumsfeld reiterates the importance of our client’s shift from “reform to excellence,” or from “tail to tooth,” by stating that he is launching a campaign to shift DoD resources from the bureaucracy to the battlefield,” and

further emphasizing that this shift “is a matter of National Security.”⁴

Mr. Aldridge clearly and succinctly affirms AT&L’s objective by stating that “We are not in the process business. We are not in the technology business. We are not in the administrative business. We are no more in these businesses than a paramedic is in the ambulance business. Every one of us is in the war-winning business and life-saving business, and it’s deadly serious work.”⁵ With this in mind our client’s five goals to achieve excellence within government acquisitions are to⁶:

- Achieve credibility and efficiency in the acquisition and logistics support process
- Revitalize the quality and morale of the AT&L workforce
- Improve the health of the Defense industrial base
- Rationalize the weapon systems and infrastructure with the new Defense strategy
- Initiate high leverage technologies to create weapons systems and strategies of the future

“...Each one of us is in the war-winning business and life-saving business, and it’s deadly serious work.”—Mr. Pete Aldridge (USD(AT&L))

² <http://www.defenselink.mil/pubs/ofg/>

³ <http://www.defenselink.mil/pubs/ofg/>

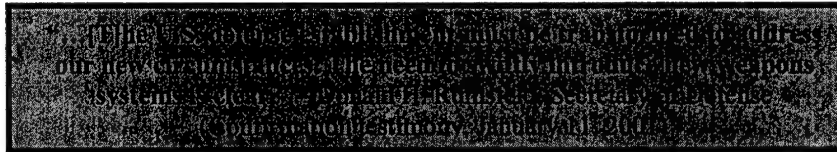
⁴ “Acquisition and Logistics Excellence Week: Shift from Tail to Tooth,” *AR Today* September/October 2001, Vol. 6, No. 5

⁵ *ibid*

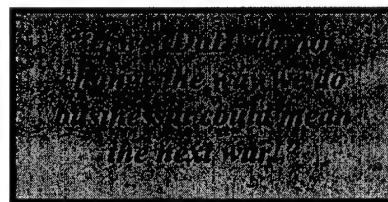
⁶ *ibid*

Understanding our client and the USD(AT&L) road-map for future government acquisition success was critical in embarking on this study and determining the nature and the scope of the problem at hand.

Nature and Scope of the Problem



The United States Government (USG) is interested in reducing the barriers to business operations that have resulted between non-traditional defense contractors and the DoD. The DoD desires the ability to access cutting edge technology available on the commercial market and attract commercial companies into business partnerships with the DoD. Currently, many non-traditional defense contractors are hesitant to do business with the DoD because of compliance requirements, like TINA, associated with conventional cost-based contracts. The objective of the DoD, in relation to defense contracting, is to process much needed capability to the war fighter quickly, cost effectively, and at a reduced risk.



Since the early 1990's the DoD has made many strides in the right direction and forged ahead in the new era of acquisition reform. For example, Integrated Product Teams (IPT) within the OSD have challenged the reform objectives and the feasibility of implementing Price Based Acquisitions (PBA) for DoD contracts. In particular, price-based (as opposed to cost-based) acquisition "is essentially making

purchases without reliance upon the supplier's cost information. Price-based Acquisitions (PBA) is a way of doing business that begins with identification of a need and flows through post-award activities. The decision to use a price-based approach is driven by choices made during the Requirements

Definition process, is heavily dependent on risk mitigation and the chosen acquisition strategy, and is aided

by competition or alternatives. In its purest form, PBA results in a firm-fixed-price (or fixed-price with performance incentives) contract and a fair and reasonable price is established without obtaining supplier cost data.⁷ Besides a transition towards PBA, recent DoD Acquisitions Reform measures have established iterative (time-phased or block) operational requirements for DoD contracts that will be acquired through evolutionary acquisition and spiral development and a shift towards more Civil-Military Integration (CMI).

Still, many key figures in the government acquisition world feel that more research on "best business practices" is needed and that the DoD must not only "be innovative and open to change," as Dr. Marvin Sambur recently stated at an AQ call at Headquarters, U.S. Air Force, but they must continually "mine the private sector for ideas".⁸

⁷ "Price Based Acquisition," DON Acquisition www.acq-ref.navy.mil/topic.cfm?topic_id=17

⁸ Dr. Marvin Sambur AQ Call 29 Nov 2001 HQ US Air Force.

This problematic reality is by no means trivial. One high ranking military official during an office call with his acquisition elites was quoted as emphatically stating, "If we do not change the way we do business it could mean the next war!"

High value, military specific, sole-source procurements have traditionally been negotiated as cost-based procurements using certified cost or pricing data. With a cost-based approach, there is little incentive to a contractor to reduce the price of an item because profit is based on a percentage of the cost. With acquisition reform and a need to attract non-traditional contractors, the DoD has explored alternative contracting approaches such as Price-Based Acquisition (PBA), wherein "price" is established based on a variety of conditions. In the place of certified cost or pricing data, Contracting Officers are using exceptions and price analysis to determine price reasonableness. Still, auditors are generally uncomfortable with this approach. Certified cost and pricing data is required by law for all government cost-based contracts that are governed by the Truth in Negotiations Act (TINA)⁹.

As a result, the DoD is faced with the following problem: *How to ascertain*

fair and reasonable price without reliance on certified cost and pricing data?

Commercial

industry negotiates contracts without resorting to

TINA. The Department is interested in how commercial companies establish fair and reasonable prices in the absence of competition. In particular, *when there is only one source of supply, what due diligence is placed on ascertaining a fair price?* Furthermore, the DoD is ultimately concerned with making themselves more attractive in the eyes of non-traditional defense contractors. Despite recent changes in the processes and many success stories, the DoD is still unable to entice these non-traditional firms. What then, from the perspective of the nontraditional defense contractor, *currently serve as barriers to entry or impede the relationship between the DoD and non-traditional defense contractors?*

As a result of cultural and structural rigidities, managing change within the context of the DoD is a difficult, complex and extremely risky process. Nicolo Machiavelli captures the essence of change and the feelings likely shared by commercial corporations and the

DoD in his literary masterpiece *The Prince*. "And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than

to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions,

"And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and like warm defenders in those who may do well under the new." Nicolo Machiavelli, *The Prince*

⁹ Price Based Acquisition---Statement of the Problem. Richard Sylvester, November 11, 2001.

and lukewarm defenders in those who may do well under the new.”¹⁰ Thus, in an effort to mitigate the risks involved with these potential reforms and maximize positive benefits, the DoD is curious to know whether a removal of barriers to entry would result in a greater supply of commercial R&D. Finally, in order to take advantage of commercial best practices, *how do commercial companies manage change, mitigate risk, and work with suppliers on a long-term basis?*

Although we do not speak to these questions in the order listed above, the report addresses these questions in turn throughout the course of the paper.

¹⁰ Dr. Marvin Sambur AQ Call 29 Nov 2001 HQ US Air Force. “The Prince,” Nicolo Machiavelli. 1505 A.D.

The Modern Military Procurement System: "It's Been A Long Journey"

To say that the military procurement system has traveled down a long and winding road of reforms in its 200 plus year history is a drastic understatement. For example, even as early as 1777, "General George Washington was forced to commission his own cannon-casting facilities because private manufacturers were unwilling to accept the contract."¹¹

The more things change, the more they stay the same. Today, "recurrent problems with inadequate, underperforming and overly expensive weapon systems," have resulted in many recent reforms to the DoD procurement system.¹² In particular, the problems with the current system can be traced back to the years following World War II, when the military and civilian industrial bases diverged, resulting in separate research and development (R&D) and production markets.¹³

¹¹ van Opstal, Debra, *Road Map for Federal Acquisition (FAR) Reform: Report of the CSIS Working Group*, Center for Strategic and International Studies, Washington, D.C., 1995. (via RAND Report "Cheaper, Faster, Better?: Commercial Approaches to Weapons Acquisition")

¹² Permission Granted from RAND to site this report: Lorell, Mark, "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000,

www.rand.org/publications/mr/mr1147

¹³ *ibid*

Although military R&D capabilities far exceeded their civilian counterparts in the years directly following the war, the

civilian market caught up with and surpassed the military capability for hi-tech applications by the 1970's. After the Cold War, defense budgets declined

and the military was forced to tighten its belt. Irrespective of the political dynamics, procurement costs continued to grow.

According to a recent report published in 1998, the DoD and the commercial world drastically differ in business practices. In particular, in DSMC's *Implementing Acquisition Reform: A Case study on Joint Direct Attack Munitions (JDAM)*, a team, under the direction of Mr. Terry Little, succeeded in summarizing the differences between the DoD and commercial industry and indicated that the divergence since World War II had never been more pronounced (see Appendix E).

Individuals in government and in the commercial world agree that the divergence is at least partly to blame for many of the current hardships facing the government procurement system and firmly trust that "if the United States is to maintain a defense establishment adequate to the wide range and dynamic nature of future threats to national

security, steps must be taken to make national security affordable.”¹⁴

Specific to our study, these steps included analyzing the civilian market for answers.

Our report will shed some additional light on the central questions posed by our client, Mr. Richard Sylvester, and help the DoD in its effort to positively effect change in the government procurement system on the road to acquisition excellence.

¹⁴ Higgins, Guy (CAPT. USN) “CAIV—An Important Principle of Acquisition Reform” *PM* Jan-Feb 1997

The information in this report was acquired through interviews with government program managers and other government officials, industry officials, and academics. In particular, we would like to reiterate that in an effort to gain unfettered access into the dynamic that exists between commercial companies and the DoD and to protect those individuals that have been kind enough to provide the researchers with candid and thought provoking opinions, all information that was forwarded by points of contact within commercial industry or garnered by this analysis exercise in its dealings with commercial industry has been deemed non-attributable and held within the strictest confidence by the researchers.

As the DoD is the client in this case, opinions put forth by points of contact within the DoD will not be held to the same level of non-attribution. Information that is gathered in various interactions with the client, in person, over E-mail, via mail and in telephone conversations has been attributed to the individuals responsible for such information.

With this attribution policy in mind our research was divided into three phases:

- 1) Background analysis
- 2) Client visit
- 3) Commercial industry research

The first phase of our research, background, relied mostly upon published materials and has been described in detail in the preceding sections. As is such, the following

paragraphs will briefly describe the last two phases as a reference point and context for the remainder of report.

Client Visit

In addition to initiating initial contact with the client over the telephone and via E-mail, the research team conducted a field exercise at the Pentagon in Washington DC on the 12th and 13th of December, 2001. The field exercise, in addition to gathering information and conducting interviews, allowed the research team the opportunity to meet various members of the client team to include Mr. Richard K. Sylvester (Deputy Director, System Acquisition), Ms. Diedre Lee (Director, Defense Procurement-DoD), Ms. Donna S. Richbourg (Director, Acquisition Initiatives-DoD), Ms. Carol Covey (Deputy Director, Cost, Pricing and Finance), Ms. Barbara Brygider (Senior Policy Analyst), and Mr. Richard Brown (Procurement Analyst). Throughout the course of the two-day interview process we were able to gather valuable information concerning the Policy Analysis Exercise relationship and commitment, background information on the problem and specific information concerning problem focus. An example of the interview questions can be referenced in Appendix B. In conclusion, this research trip enabled us to construct a logical "way ahead" for determining how to approach the upcoming commercial industry interviews.

Commercial Industry Research

Following the research field work at the Pentagon, the research team was able to

construct a cogent set of survey questions for various commercial companies that might aid the DoD in its efforts to ascertain information on the central questions posed by the client (Mr. Richard Sylvester). A number of commercial companies were identified as potential sources of information. From this collection of commercial companies, the individual companies were divided into three separate subcategories. Each commercial company was identified as a traditional defense contractor, a non-traditional defense contractor that had reduced its operations with the DoD, or a non-traditional defense contractor with little connection to the DoD in the realm of high tech/research and development contracts.

Ultimately, we interviewed over 30 contacts and referenced a wide array of published materials, internal company materials, case studies and other sources of information. Of particular interest were:

- The Defense Science Board Task Force's Final Briefing "Preserving a Healthy and Competitive U.S. Defense Industry to Ensure our Future National Security," November 2000
- The Defense Systems Management College's (DSMC) "Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM)" May 1998
- RAND's "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000

- DSMC's *Risk Management Guide for DoD Acquisition* 4th ed. February 2001
- Dr. Jacques S. Gansler's, *Defense Conversion: Transforming the Arsenal of Democracy*, 1995

We eventually conducted four rounds of interviews. Initially, we contacted members within each of the three categories for some basic background information. We used this information to spur more research and consulted our advisor(s) and client in order to formulate a focused PAE proposal. Then we conducted a second round of interviews only including those individuals in the traditional and non-traditional category that provided specific insight to "fair and reasonable pricing." We used this information to narrow the field down further and in the third round of interviews we focused solely on the non-traditional defense contractors. Finally, we contacted numerous hi-tech companies and spoke with individuals intimately involved with either contracted R&D or company specific R&D that is contracted out on a sole-source basis. This allowed us to analyze a number of specific, analogous commercial-to-commercial sole-source R&D situations. The core of our findings is based on the information gathered in the last two rounds of interviews.

(Survey questions for traditional defense contractors, non-traditional defense contractors that have reduced operations with the DoD, or non-traditional defense contractors with little connection to the DoD in the realm of high tech/research and development contracts are included in Appendices C, D and E)

Question: How do commercial companies establish fair and reasonable prices in the absence of competition with respect to research and development/high-tech applications?

Major Findings

The first and underlying query put forth by the DoD with regards to commercial practices asks the fundamental question of how the commercial world establishes the equivalent of fair and reasonable pricing in its research and development activities without reliance upon certified cost and pricing data. The commercial business world and the world of government contracting are vastly different systems. An investigation of the manner in which the two entities achieve the same end, fair and reasonable prices, is sufficient to reach the conclusion that both engage in wholly dissimilar business practices.

However, in our efforts to investigate characteristics of commercial firms engaged in research and development activities we uncovered two common findings with respect to these unique business relationships. In order to achieve the equivalent of fair and reasonable pricing, commercial firms establish exhaustive, internal, technical expertise concerning research and development pricing rates and engage in thorough, informal negotiations with prospective business partners before establishing a price for potential services.

Commercial firms that engage in R&D activities with business partners possess

a level of sophistication concerning pricing rates, project milestones and development timetables that help to make the process much easier to manage. According to a contracting specialist at an established commercial firm, "There is better understanding of the forces that impact price by our buyers than we perceive the average government buyer has. The conduct of market research and an in-depth understanding of the product and processes help to focus our buyers on price reasonableness."

Another employee at a different commercial firm, described the elements of success that allowed his company to engage in a mutually beneficial R&D venture with a cooperative commercial company as such, "They were sophisticated enough to buy the R&D and we could make internal assessments about the ballpark number and make a reasonable decision concerning value.

We knew labor rates based upon experience and could control the cost of the contract based upon the number of hours that were ordered." Market research and experience help commercial firms

determine a fair and reasonable price for whatever ventures the firm chooses to undertake.

"There is better understanding of the forces that impact price by our buyers than we perceive the average government buyer has. The conduct of market research and an in-depth understanding of the product and processes help to focus our buyers on price reasonableness"

Compensation for research and development is difficult to determine, but commercial companies across multiple industries claim that judicious market research on the part of the buyer is the only way to secure a fair price. In addition to in-house estimates, commercial firms also make better use of competitive published price lists and comparisons of rough yardsticks to determine gross inconsistencies. To quote an employee at a high-tech, commercial firm, "The most you should ever pay is what it would cost you to do it on your own."

The determination of "fair and reasonable" with respect to commodities provides a much simpler situation for price determination than prices associated with research and development. Research and development is inherently risky. In describing how his company operated in a research and development contract with a large pharmaceuticals company an employee at a research-oriented firm said, "We know the labor rates and can compare them to different providers. We know what it costs to pay for a graduate student and what it costs to pay a professional researcher. You need to rely on your technical information and fund the program incrementally. Basically, you're paying for time with no guarantees."

Pricing databases and savvy market research are fundamental to the specific nature of pricing a labor hour explicit to a research and development contract, but the process of determining just how many hours to contract towards a project is an even finer skill to master. When

asked how to determine the fairness and reasonability of a R&D venture, one manager at commercial firm noted that, "Technical managers have accountability standards of their own. These include consideration of project specific milestones and money put into a project," in addition to the quantitative nature of determining fair labor rates.

Often times, milestones in commercial industry are dictated by profitability considerations.

Project timetables are important to any project, but if the marginal benefit of further development does not outweigh the marginal cost, the end goal of

profitability could be jeopardized. As quoted by an employee associated with a large software development firm, "The major test that we use that is non-existent in government is operating margins. Companies watch margins on an almost daily basis. If a company is running a 35% positive margin between costs of goods sold and sales revenue, and those are historically very high margins, and if you look at a pricing model that says it is going to cost me \$95 on every \$100 of revenue on this product then there is something wrong... That would be a signal that either the development costs are too high or the pricing is too low."

In addition to the development of internal technical expertise on rates and the careful consideration of project milestones, commercial companies rely on the ability to thoroughly and informally negotiate a contract to determine fair and reasonable prices. According to a contracting specialist at a



reputable consulting firm, negotiation savvy is imperative to establishing fair prices. "We establish price by straight up, open negotiation. So, it is a matter of how much the client is comfortable paying. How badly do they want this thing? They usually want it but it can be extremely expensive. So we calculate internally how much of a break we can give the client. R&D pricing is basically a matter of loose compromise and negotiation."

Further describing a specific relationship between his firm and a large biotechnology firm, the employee was quoted as saying, "So we came up with an offer of say X-million dollars and they came back and said, 'Look, as you know we are a large company, but you are dealing with a specific department on a limited budget, so we can't afford that, but honestly you have worked with us before and this is what we can spend.' So we scratched our heads and told them that this research requires some sort of investment and we'll do it if we retain the rights for the technology." Ultimately, the business relationship is governed by a sense of openness and negotiation that is not found within the DoD.

Program managers, or the equivalent, within the commercial world are given considerable latitude to make decisions about contracts and carry out those decisions to save money or increase profits for the parent company. An expertise in business negotiation and the freedom to make decisions aid the program manager for research and development contracts in determining the ultimate value adding potential of a specific project. Negotiating the initial contract and negotiating changes in the

contract throughout the life cycle of a program are important components of successful business operations. "If we see a red flag, we react to it," claims one commercial contractor. "In our negotiations, we try to promote understanding and align expectations." Without personnel trained to negotiate the more complex aspects of research and development contracts and the freedom to negotiate such contracts, commercial companies would be faced with frustrating circumstances similar to what currently face the DoD.

Recommendations

As a result of the major findings within commercial industry with respect to the manner in which commercial companies establish the equivalent of fair and reasonable pricing in their commercial operations, it is recommended that the DoD initiate internal reform. Specifically, the DoD should focus upon:

- 1. Developing a technical pricing expertise**
- 2. Training a cadre of negotiating experts**

Technical Pricing Expertise

There is a relatively common belief among commercial firms that the individuals within government tasked to handle research and development contracts lack pricing savvy with respect to commercial counterparts. According to a report released by the General Accounting Office, "Recent commercial prices paid by some DoD contracting officers may reflect insufficient training or a lack of understanding of what

constitutes good price analysis in a sole-source environment.”¹⁵ In addition to comments put forth by the GAO, the commercial representatives that we interviewed throughout the research process had similar estimations about the ability of government contracting officers to price in a sole-source contract. According to one source, government, contracting officers were exceptional when it came to pricing production, but when it came to pricing research and development, contracting officers lacked the experience and technical expertise to price the service in a fair and reasonable manner.

The solution to such a situation lies in more training for the contracting officers assigned to such contracts. If the DoD hopes to attract commercial companies to engage in joint research and development type contracts, the contracting officers assigned to the contracts must be as savvy as their commercial counterparts. As described throughout our interviews, commercial firms were only willing to engage in R&D relationships with other commercial firms if the buyer was sophisticated enough to purchase the R&D. Research and development is different than any other type of commodity, but in pricing the contract for R&D ventures, suppliers of R&D services mandated that the buyer of such service possess similar abilities to price R&D. Commercial companies require

that research and development partners been seen as capable peers.

This requirement forces buyers, like the DoD, to engage in considerable market research with respect to labor rates. If the DoD hopes to attract commercial companies to engage in R&D efforts, DoD contractors must have access to internal databases and have proper training concerning the use of such databases.

According to one source, government, contracting officers were exceptional when it came to pricing production, but when it came to pricing research and development, contracting officers lacked the experience and technical expertise to price the service in a fair and reasonable manner.

The construction of such databases assigned to test the reasonableness of R&D labor rates is no easy task. It will require considerable cooperation between the DoD and other commercial companies. However, if the DoD is able to tap the pricing methods of commercial firms it will be better postured to train its individuals to engage

in future R&D contracts. Without a technical understanding of R&D labor rates, government contractors will not be able to effectively negotiate sole-source contracts.

In addition to this understanding of labor rates, the DoD would also benefit from the commercial practice of establishing milestones and making decisions about future development costs based upon those explicit milestones. This would imply that program managers and contracting officers alike must understand the potential benefit of a project and determine the value of that contract based upon progress. Research and development does not always yield results in a timely manner. However, the DoD must determine its commitment to the project and the commercial

¹⁵ Saldarni, Katy. “Report: Defense Buyers Lack Shopping Savvy.” GovExec.com, June 29, 1999.

contractor based upon the importance, synonymous with the commercial sector's view of "profitability," of the R&D product. Without an adherence to milestones associated with project importance, it would be difficult for the DoD to determine a fair and reasonable price or determine a fair and reasonable amount of labor hours to devote to the program.

The DoD has made considerable gains with respect to the commercial pricing of tangible commercial items. If the government wishes to attract non-traditional defense contractors it must begin to view research and development as a commercial item in and of itself.

Train a Cadre of Negotiating Experts

As mentioned above, if the DoD does not have a firm understanding of R&D labor rates it cannot hope to effectively negotiate sole-source R&D contracts. The two elements, technical expertise with regard to labor rates and a trained cadre of negotiating experts are not mutually exclusive. The DoD cannot hope to effectively master the practice of fair and reasonable pricing without a combination of the two skills.

"As a result, training for contract officers should be intensified until price analysis and negotiating skills improve, GAO recommended. DoD's current training efforts 'have yet to be fully understood

or embraced,' GAO said."¹⁶ The lack of training with respect to negotiating skills is a source of frustration for many commercial companies. Commercial, "employees also felt that some contractors are too difficult to negotiate with due to their status as sole-source providers."¹⁷

Training of contractors in the methods of effective negotiation techniques is difficult to prescribe as an exact science, but according to best practices as employed by commercial firms, it is necessary if the DoD wishes to mimic and make use of the methods employed by commercial firms. "You need articulate people, abstract thinkers, people with integrity, people that are good at talking with other people and people that possess a level of technical expertise about the program," says one commercial employee describing what his company looks for in its employees with respect to negotiating skill. In the end, negotiation savvy represents the backbone of commercial practices ascribed to by non-traditional defense contractors that engage in research and development type contracts.

According to Mr. Terry Little, current director of the newly formed Air Force Acquisition Center of Excellence, "Do not use

development costs as a discriminator... rather, sit down and work out program

"Do not use development costs as a discriminator... rather, sit down and work out program development costs with the contractor's best effort and goal of larger, generally more reliable and important issues of price and production and operations and strategic importance of the company in the past and its ability, performance and capabilities of the product as the major determining factors in selection."

¹⁶ *ibid*

¹⁷ *ibid*

and price issues with the contractors beforehand and look at larger, generally more relevant and important issues of price and production and operations and strategy, performance of the company in the past, and possible performance and capabilities of the product as the major determining factors in selection." In order to adequately adopt these recommendations, the DoD must make sure that its contracting officers are properly trained in methods of negotiation.

Program managers that understand business practices within the commercial world are fundamental to the success of potential R&D contracts. In addition to negotiating an original price, program managers should be well versed in the ability to evaluate and negotiate the future life cycle of a specific program. To quote Mr. Little again, "Finally, what else needs to be fixed in the defense industry is our practice that once a program gets going it never stops. We cannot be afraid to kill an unprofitable program. It happens in the civilian world. For example, in the drug industry they assess where they are in a project or program's life cycle, neglecting what has been invested so far...but rather on what it would take to get over the hump and be successful and what type of returns this would mean. Neglect sunk costs."

Training requirements for this aspect of contracting might ultimately result in an additional expense for the DoD, but the benefits that are sure to come from better trained, savvy buyers will outweigh the extra costs associated with such education expenditures. Without proper training with respect to commercial business practices, program managers and contracting officers cannot hope to

flourish in increasingly commercial world.

Question: What are the barriers to entry and what reforms are necessary to attract more non-traditional commercial companies to the DoD acquisition system?

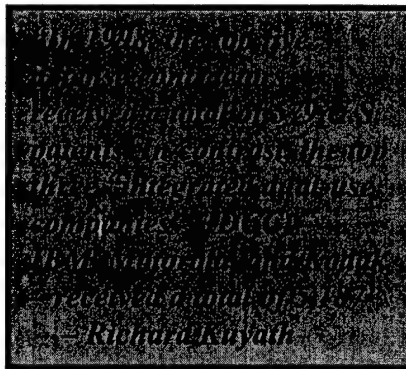
Major Findings

The second part of our focus, as prescribed by the DoD, tasked the research team to investigate aspects of the DoD/commercial relationship that might prove responsible for dissuading non-traditional, high-tech firms from doing business with the DoD. Essentially, what can the DoD do to attract the non-traditional companies to the DoD acquisition system? In answering this question we found that the commercial firms interviewed had a variety of responses, but two common themes, intellectual property rights and DoD contract participation conditions, pervaded the way in which commercial companies do business and characterized the frustrations towards the DoD system.

First and foremost, intellectual property rights are a major concern for any commercial company. Intellectual property and patent rights are today's commercial capital. Without securing the rights to intellectual property, any advancement that is realized by a commercial firm is subject to duplication on the part of other competitors.

Commercial firms dedicate an enormous amount of time, energy and resources to the funding of research and development projects that are likely to produce new

and profitable intellectual property. Traditional defense contractors, however, do not appear to have been as successful as non-traditional firms in efforts to fund research and development. "In 1998, the top five defense contractors received a total of 579 U.S. patents. In contrast, the top three "integrated dual-use companies" (IDCC) – IBM, Motorola, and Kodak – received a total of 5,187."¹⁸ Most R&D is taking place in commercial firms and intellectual property concerns are an important aspect of that fact.



A government study published in October of 2001 entitled, "Intellectual Property: Navigating Through Commercial Waters" has been groundbreaking in its efforts to address these issues, but according to interviews conducted throughout the research process, "intellectual property rights are definitely a concern."

The Bayh-Dole Act of 1980 was successful in allowing commercial firms the ability to retain the rights to intellectual property, but according to an article written by Diane M. Sidebottom

¹⁸ Kuyath, Richard N., *The Procurement Lawyer: Barriers to Federal Procurement – Patent Rights*. Fall 2000, pg. 11

in the Winter 2001 publication of the *Public Contact Law Journal*, "Commercial companies are now concerned with retaining sufficient intellectual property rights to justify spending the large development funds necessary to get their invention into the marketplace. Furthermore, they are concerned about keeping their inventions' unique and valuable aspects as confidential as possible."¹⁹ Commercial firms are forced to make a decision between pursuing a patent or maintaining a trade secret if the firm is interested in doing business with the DoD.

The establishment of trade secrets is more attractive to commercial firms than the comparatively expensive and time-consuming process associated with patent protection. According to the current language of the Bayh-Dole Act, the measure, "does not allow the option of choosing to retain the invention as a trade secret."²⁰ The requirements associated with the establishment of patents as opposed to trade secrets are non-negotiable and, "for companies whose corporate intellectual property strategies involve trade secret retention, these requirements often will be a deal breaker."²¹

The investigation of intellectual property rights and the specifics associated with the integrity of trade secrets in contrast to the patenting of inventions are topics worthy of independent research. However, in the course of our own

research it proved a common focus of informal discussion and an aspect of the DoD/commercial relationship that cannot be ignored as a significant barrier to entry.

In addition to intellectual property rights, the very nature and process associated with doing business with the DoD with respect to the nuances of government contracting stand as significant barriers to entry and overriding deterrents to non-traditional defense contractor involvement in the R&D process.

It is perhaps best to classify the overall feelings of frustration with the DoD system as a general dissatisfaction with contract participation conditions. Such stark differences exist between business practices and standards as required by government statute, that many commercial firms are hesitant or unwilling to do business with the DoD. In the words of one senior manager at a reputable commercial consulting firm, "The process is long, very long."

Specific aspects of government contracting such as formality, regulatory requirements, auditor access, and recovery clauses for overpayment on the part of the DoD are characterized as impediments to the potential business relationship between commercial firms and the DoD.

As described by a purchasing employee at a large commercial firm, "Working with the DoD is such a hassle. Administrative hurdles, time reporting requirements and paperwork keep us from doing the jobs associated with research and development that we are designed to do. We have employees that wear white coats to work. The DoD

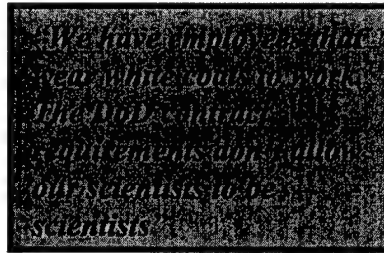
¹⁹ Sidebottom, Diane M., "Updating the Bayh-Dole Act: Keeping the Federal Government on the Cutting Edge". Vol. 30, No. 2, Winter 2001, pg. 238.

²⁰ *ibid*, page 239.

²¹ *ibid*, page 239.

contract requirements don't allow our scientists to be scientists." Another employee at the same firm succinctly put the frustrations with DoD contract participation conditions into light. "National interests are fine, but everyone prefers to do something besides government work unless we have lean times."

A contracting employee at another large, high-tech firm put forth another frustration with respect to DoD contacts and the conditions associated with participation, "With the responsibility that you incur typically on [government] R&D efforts, you are looking at going outside the commercial box and attitude as far as pricing. If they [commercial industry] are forced to have cost type ramifications it immediately says that they have to change some sort of the organization and they will have to hire a new set of people and the price will go up." By participating in the normal DoD contract framework, many commercial firms are forced to develop a new set of skills to manage the DoD contracts or firms are forced to create a new business unit to properly oversee the execution of a DoD contract. Unfortunately, this requirement is not always conducive to the strategic goals of commercial firms. The profits from a potential contract with the DoD are not always sufficiently attractive to commercial firms to warrant the establishment of new internal organizations trained to conduct business with the government. For some smaller commercial companies, the costs are simply outside the bounds of normal capacity. For other larger firms, the time and effort associated with such contracts are not worthwhile.



However, when the DoD is willing to operate outside the normal structure of a government contract, most commercial firms are quick to engage in business operations. An employee in a large research oriented firm described a situation in which a consortium of commercial companies was interested in doing business with the DoD.

According to the employee, one firm in particular was wholly unwilling to open all of its research and development units to the DoD in the normal framework of

government contracting. "The [company] said if you come to us with a traditional contract, only a limited number of our business units will work on it. With a different type of contract, the DoD will have access to all of our research and development units and all of our state-of-the-art technology."

Currently, the commercial research and development industry is healthy enough to reject DoD contracts in favor of more profitable and less stringent commercial relationships. It is likely that this trend will continue to occur into the foreseeable future. As is such, the DoD must alter its business operations if it wishes to retain access to advancements in technology.

Recommendations

The barriers to entry described above must be addressed if the DoD acquisition system hopes to attract non-traditional defense contractors. The effect of these barriers on small businesses is especially disheartening. "No small company can

afford the apparatus to deal with current government procedures,” said Kenneth P. Morse, managing director of MIT’s entrepreneurship center. “If you want to make this call to action work, the government has to change its own procedures.”²²

Changing procedures within the DoD framework is not an easy task.

Regulatory and structural rigidities are difficult to reform within the context of a bureaucracy. However, two options available and attractive to the DoD are the use of

contract types known as other transaction agreements and “pilot programs.”

Use of Other Transaction Agreements and “Pilot Programs”

Commercial, non-traditional defense contractors, by and large, are partly dissuaded from engaging in business relationships with the DoD as a result of time consuming, stringent contract participation conditions. The very system in which these commercial companies are forced to operate stands as a barrier to entry. As is such, many proponents of reform recommend that the DoD employ a more liberal use of other transaction agreements and pilot programs. According to Mr. Richard Kuyath, “Other transaction (OT) agreements are exempt from the statutes and regulations that have forestalled commercial companies from doing federal government business. As a result, DoD can issue OT agreements to

commercial companies who in turn can use their own commercial accounting and other standard practices when performing government funded R&D work.”²³

Most relevant to issues of contention stemming from intellectual property rights, OT’s allow commercial firms the ability to keep an invention as a trade

secret and allow commercial firms the opportunity to market a product free from government licensing for five years after the contract is completed, to name a few provisions of

an OT.²⁴ Again, according to Mr. Kuyath, the DoD contracting personnel often seem reluctant to use the OT authority.²⁵ Instead, most contracts within the realm of DoD applications are managed as traditional procurement contracts. This practice of using the traditional format associated with normal procurement contracts dissuades non-traditional defense contractors from participating in DoD R&D projects.

“OT agreements with commercial companies will also enable the use of commercial accounting and other commercial practices when performing DoD-funded R&D,” claims Mr. Kuyath.²⁶ As highlighted in the previous sections, compliance with DoD specific cost accounting standards and expensive government oversight are significant

“No small company can afford the apparatus to deal with current government procedures”— Kenneth P. Morse, managing director of MIT’s entrepreneurship center

²² “Technologies Against Terrorism.” *Boston Globe*, October 27, 2001.

²³ Kuyath, Richard N., *The Procurement Lawyer: Barriers to Federal Procurement – Patent Rights*. Fall 2000, pg. 17

²⁴ *ibid*

²⁵ *ibid*

²⁶ *ibid*

barriers to entry for prospective commercial partners.

In regards to the commercial interpretation of OT agreements, one commercial employee at a large commercial research and development organization was quoted as saying, "There is a relatively new concept called OT agreements that DARPA and other research organizations use. The Navy uses them fairly frequently. Basically, in an OT agreement, you can negotiate any sort of terms that you wish as long as they are deemed legitimate. For this kind of work [R&D] I feel that OT agreements are really important and ought to be used more."

If the DoD were to take advantage of its ability to exercise OT authority, it is likely that a number of commercial companies that are hesitant to do business with the DoD would open up to more R&D partnerships. Without greater flexibility in the handling of commercial contracts, the DoD is likely to remain a partner with whom many commercial companies are unwilling to interact.

In addition to the benefits associated with intellectual property and accounting standards that a more liberal application of OT agreements would foster, the DoD would also benefit from a more liberal application of so called "pilot programs." Defense Acquisition Pilot Programs (DAPP's), free from the normal requirements of government contracts, enable DoD teams to better utilize commercial practices and allow for freer management of the development and procurement process. DAPP's, "are provided expedited deviation authority from the

FAR/DFARS and the DoD 5000 series regulations."²⁷ Essentially, such programs are allowed to, "issue a commercial-like contract and authority to streamline the milestone review process and reporting procedures through expedited waivers."²⁸

An excellent example of a success story with respect to the application of pilot programs was evident in the Joint Direct Attack Munitions (JDAM) procurement of the mid-1990s. While the procurement was carried out with a traditional defense contractor, the lessons learned from JDAM's role as a pilot program are highly applicable to R&D type contracts. JDAM's pilot program status allowed for open communication between the DoD and commercial teams. Free from normal government contract conditions, the individuals working on the JDAM program were allowed to act "commercially." According to Oscar Soler, the eventual successor of Terry Little as program manager for the project, "We were there day to day, shoulder to shoulder, hand to hand as part of one team effort... We told our people: instead of waiting for a submission... go out and be part of the team. Don't point out problems, instead solve them."²⁹

JDAM's success as a pilot program is evident in the numbers. "McDonnell Douglas team's final proposal included an AUPP between \$14,000 and \$15,000 (from an original cost target of \$40,000 and original cost estimate of \$68,000).

²⁷ Ingols, Cynthia "Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM)," May 1998

²⁸ *ibid*

²⁹ *ibid*

The JDAM team reduced its research and development costs from \$380 million to \$310 million, and shortened the development program length from 46 to 30 months. The total procurement cycle was reduced from 15 years to 10 years, while the product actually improved on original accuracy requirements."³⁰ JDAM is proof that a pilot program, focused on commercial practices, can meet project requirements and is proof that the DoD can operate under more commercial conditions.

Commitment to the use of pilot programs and a more liberal application of the authority to include purely R&D efforts will allow the DoD the opportunity to hone its commercial skills. Assuming that the DoD is willing and able to procure R&D in this manner, it is likely that more non-traditional defense contractors would be more willing to engage in partnerships with the DoD. Without contract types that allow more freedom from the normal requirements of government procurement, such as OT agreements and pilot programs, many in commercial industry seem unwilling to work with most government agencies.

³⁰ *ibid*

Question: How do commercial companies establish and foster long-term, cooperative supplier relationships with respect to research and development/high-tech application contracts?

Major Findings

The third part of our focus, as prescribed by the DoD, tasked the research team to investigate how the commercial world fosters cooperative, long-term relationships. As highlighted in our background section, the DoD is often seen as promoting a more adversarial, rather than cooperative buyer/supplier relationship. As one former high ranking military officer and current senior employee at a major hi-tech applications firm claims, "According to the sales force that sells to the DoD, I see in (my company) a frustration that they have the answers but the DOD won't listen...everything from Mil-Specs to customer relationship management and a lot of these potential solutions are questioned."

In particular, a twenty-year employee for a reputable research and development/hi-tech applications firm characterized his recent experience with the DoD as a "one-night stand," drastically differing from the typical commercial contracts with which he had grown accustomed. For example, in a recent sole-source, R&D contract for a large commercial pharmaceutical company, his firm was tasked to develop an extremely complex neurosurgery system. However, neurosurgery was

outside the realm of the firm's specialty. The firm lacked the technical expertise and savvy. This lack of specialization, which is common to most military contracts, was easily overcome by forming a panel of subject matter experts (surgeons, doctors, nurses, and healthcare managers) to assist and work directly with the program managers, on an equal level, as associates. In particular, he contrasted this example to the typical military contract experience by stating "the key to success was establishing close-relationships between the subject matter experts and the program managers that involved daily conversations and weekly face-to-face meetings, much like what an integrated product team attempts to do." Also, he indicated there was less oversight and

that his company was in charge of the sub-contractors, solidifying the establishment of trust amongst contractors.

"The main difference between the structure and management of these programs and commercial contracts is that buyers and sellers establish and achieve program performance targets in a cooperative rather than adversarial environment"—RAND 2000

In general, he felt that there was a completely different model employed with sole-source R&D contracts for commercial firms than with the military. Basically, commercial contracts are focused more on a long-term relationship that establishes trust, fosters

information pooling and benefit sharing, and develops close personal ties.³¹

In line with this procurement officer's comments, RAND published a report in 2000 entitled "Cheaper, Faster, Better?: Commercial Approaches to Weapons Acquisition," emphasizing that after a close examination of the DoD's own vastly successful experiences in a variety of pilot programs (Joint Direct Attack Munitions, (JDAM), Wind Corrected Munitions Dispenser (WCMD), and Joint Air-to-Surface Stand-Off Missile (JASSM)) surprisingly the "main benefits of Civil Military Integration (CMI)...have not come from insertion of commercial technologies or the use of dual-use production facilities," but rather "the main benefits have come from the structuring and management of these programs in a manner where buyers and sellers establish and achieve price and performance targets in a cooperative rather than adversarial environment."³²

Further industry interviews and research led us to the Best Practices (LLC) multi-industry study on supply chain management and partnerships done in 2000. In particular, Best Practices profiled a diverse group of supply chain management practices employed by over 150 companies in 31 industries that "have demonstrated effective operating principles and winning strategies."³³

³¹ Beecy, Robert E., *Supplier Selection & Management Report* March 2002, pg. 2

³² Permission Granted from RAND to cite this report: Lorell, Mark, "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000, www.rand.org/publications/mr/mr1147

³³ "Supply Chain Management and Partnership - A Summary" Best Practices, LLC 10 FEB 2000, www.bestpracticesdatabase.com

The *best practices* or underlying principles of this study were to:³⁴

1. Align supply chain management systems with strategic initiatives and goals
2. Form partnerships with suppliers
3. Certify supplier-partners
4. Employ technology to improve supplier partnerships
5. Refine and enhance manufacturing processes
6. Foster communications between partner organizations
7. Emphasize the mutual benefits of partnerships
8. Strategically adapt and implement a certification partnership process

According to the firms interviewed in our study, and in line with the findings of Best Practices, an overwhelming trend was that the DoD, in most instances, must work on fostering communications between partner organizations in a cooperative rather than adversarial manner. These firms most commonly implied that the military preferred "shallow" supplier relationships (i.e. "one-night stands"). In stark contrast, the study found that world class companies tended to promote "extensive communication mechanisms" through a "plethora of communication tools," in order to foster "deep" supplier relationships.³⁵ These organizations often used "cross-functional, cross-corporate teams," much like the aforementioned subject matter expert team and integrated product teams (IPT), "to promote the exchange of objectives and ideas."³⁶ Furthermore, this study indicates that although "telephone and video conferencing have been used for years, the effective communication of ideas often hinges on personal interaction," indicating the value of informal, as well as formal, communication with suppliers³⁷

³⁴ *ibid*

³⁵ *ibid*

³⁶ *ibid*

³⁷ *ibid*

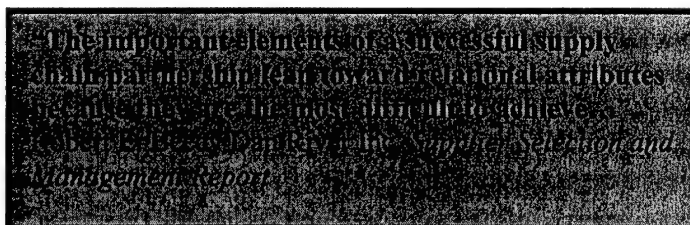
With respect to these findings the most productive means of communication with suppliers are through³⁸:

1. **Advisory councils**
2. **Conferences**
3. **Problem solving teams**

In addition to taking advantage of these modes of enhanced communications, the top companies frequently mentioned that by co-locating members of their firms “purchasers, designers, engineers and managers” gained a “deepened appreciation for the capabilities, needs, and objectives of their partners and they were able to take this knowledge back to further “enhance the process improvement efforts of each organization.”³⁹ In particular, one large automotive manufacturing firm had 400 engineers co-located on site, which helped to facilitate the “sharing of ideas and a greater mutual understanding of strategies, goals, and capabilities.”⁴⁰ We propose that these efforts on a grander scale may establish more “relationship intimacy” while focusing on specific projects, programs, and strategic relationships than Education With Industry (EWI), the Corporate Fellows Program, and even some Integrated Product Teams (IPTs), or the military equivalents. In conclusion, despite the many extremely successful acquisition reform initiatives, our research has solidified the facts made apparent in the case study on JDAM. In many commercial firms the buyer/seller relationship promoted by the DoD is seen as adversarial and opportunistic while the commercial world establishes a relationship that is more collaborative

and long-term⁴¹. Successful commercial relationships hinge on the ability to establish strategic alliances/partnerships through effective communication and mutual benefit.

Recommendations



The DoD must combat its “adversarial” image. The lack of trust this reputation fosters constrains the potential for future partnerships and acts as key barrier to entry for many non-traditional commercial firms. In particular, as indicated by many individuals interviewed and outlined in the aforementioned Best Practices study, we feel that the DoD successfully sets a strategy and keenly manages supplier certification, but needs to better nurture supplier relationships (see figure 1). Specifically, the DoD must focus on:

1. **Multi-level frequent (*informal*) communication**⁴²
2. **Establishing, promoting, and advancing technology links**⁴³
3. **Fostering strategic alliances and partnerships over contractual relationships**⁴⁴

⁴¹ Ingols, Cynthia “Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM),” May 1998

⁴² “Supply Chain Management and Partnership – A Summary” Best Practices, LLC 10 FEB 2000, www.bestpracticesdatabase.com

⁴³ *ibid*

³⁸ *ibid*

³⁹ *ibid*

⁴⁰ *ibid*

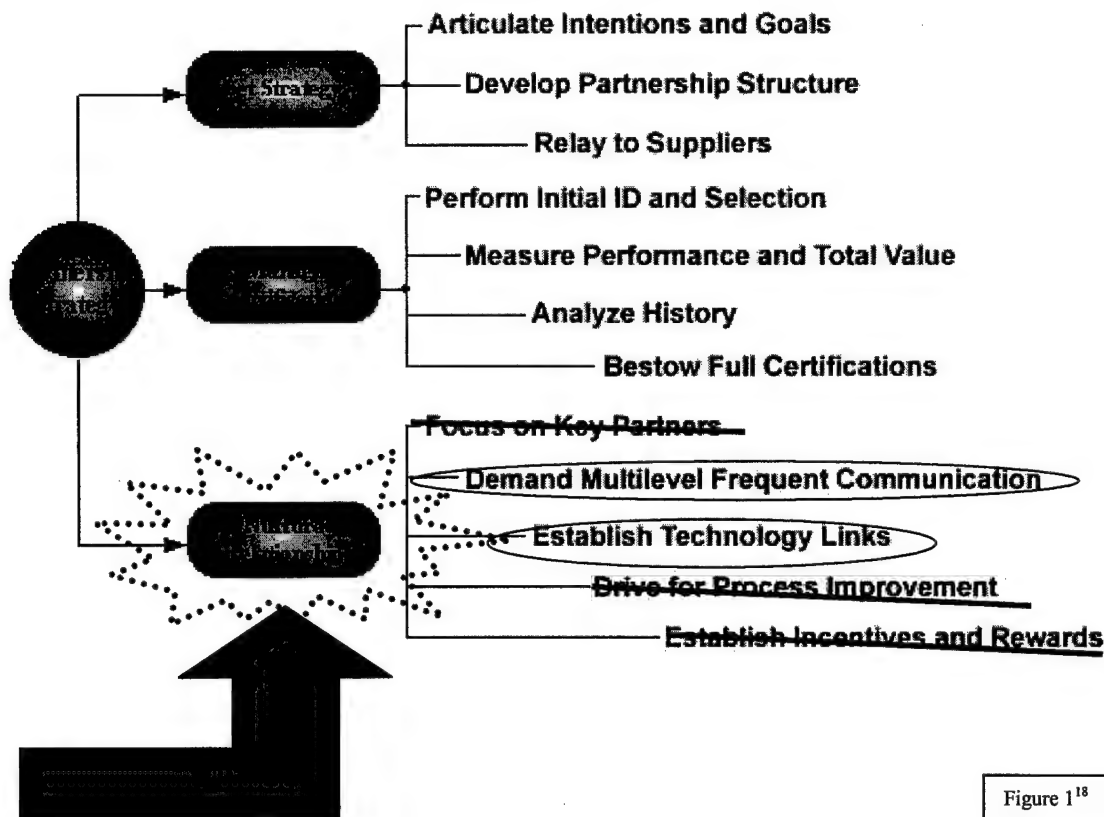


Figure 1¹⁸

Multi-level Communication

The commercial industry has proven that “a successful supply chain partnership will be driven by both formal and informal lines of communication.”⁴⁵ DoD contracts tend to specifically document the formal channels and methods of communication, however this documentation is, at times, burdensome. According to the head of government contracts at a major hi-tech company, the vast oversight and military culture encourages contractors to follow the “letter of the law,” and neglect the true intention or spirit. This practice, promotes “rigidity and inflexibility limiting the autonomy of government contractors and essentially tying their hands,” which causes many to characterize these managers as autocratic, arrogant and uncooperative.⁴⁶

⁴⁴ Eckert, James A. “Best Practice Tips on Building Supplier Partnerships,” www.fita.org/ioma/suppliers.html

⁴⁵ Beecy, Robert E., *Supplier Selection & Management Report* March 2002, pg. 3

⁴⁶ *ibid*, page 4

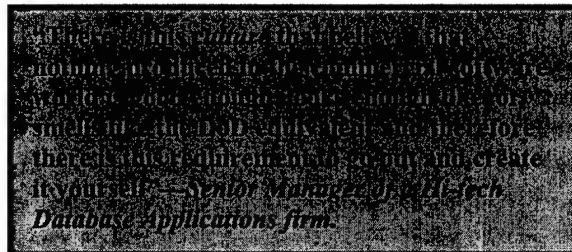
Although formal communication is necessary, the DoD must instill in young contracting officers the importance of establishing and fostering informal lines of communication. These informal lines promote stronger and longer partnerships by establishing trust and encouraging conflict resolution through the development of close personal ties while avoiding behavior that might cross the fine line of professionalism.

Establish/Utilize Technology Links

In today’s fast paced world, technology is the enabler for and pre-requisite to constant, open and constructive partnerships. Establishing these alliances is critical to breaking down the barriers of an adversarial image. In particular, “almost all world-class companies have electronic links, such as EDI, the Internet, intranets, or extranets, with their partners to eliminate unnecessary steps and free valuable resources.”⁴⁷ For example, one major hi-tech corporation credits the creation

⁴⁷ *ibid*

of an extranet with increasing “electronic intimacy” by establishing a “shared area for strategic corporate accounts, a place for collaborative work, training, issue resolution, forum discussions, and publishing of presentations and documentation.” Although the DoD is doing a great job, they may not be fully capitalizing on the numerous advantages of e-solutions. For example, a former U.S. Army Colonel and current senior employee of a database applications firm stated “there is a tradition of creating proprietary solutions in the DoD,” specifically “as you may know, software being implemented today on the desktop is military owned.” The problem with this is that “there is this *culture* that believes that nothing produced in the commercial software world is good enough, looks enough like, or smells like the DoD equivalent and therefore there is this requirement to go out and create it yourself. This whole attitude is aided and abetted by those organizations that make a living today on maintaining that Government owned software or creating new government owned software. In a sense, commercial companies are natural oppositions to defense integrators who have prospered for 40 years by writing code for the DoD and only have a future if they continue to convince their partners that they really need to write and own their own code, even if it is something as simple as ordering airline tickets and staplers or other simple e-solutions. It is utterly ridiculous!” For example, a Secretary of Defense corporate fellow for a large technology database application firm explains that



industry has been using an extremely sophisticated e-travel system since 1998 that would mesh perfectly with the Joint Travel Regulations (JTR), but the DoD has refused to use the “commercial software” and will not have a DoD type system kicked off until 2008. Ultimately, she feels that this problem is a direct result of “the huge degree of mistrust...at the middle and higher level of the Department,” stemming from poor communication.

In the end, it is a vicious cycle. Technology enables critical communication, collaboration and cooperation that in turn promote trust.

This trust is necessary to establish stronger, deeper, and more cooperative supplier

relationships. However, due to the apparent mistrust and misconception of hi-tech firms, already widespread in the DoD, procurement officers are either unable or unwilling to approach non-traditional defense contractors to capitalize on strategic advantage in e-solutions. Ultimately, the best technology is not available for military use and an adversarial relationship continues to persist.

Despite contrasting comments from both-sides about responsibility, establishing and fostering further electronic integration with strategic suppliers promotes a win-win solution for both parties involved and should *continue* to be a top priority for the DoD. The DoD must openly seek out commercial best practices for software

applications that are not military unique. In particular, local efforts at the Massachusetts Institute of Technology Research & Engineering (MITRE) and Draper laboratories, as well as within the Defense Advanced Research Projects Agency (DARPA) must be maintained, mirrored and enhanced to capitalize on commercial best practices that enable communication, foster cooperation, and break the vicious cycle.

Foster Strategic Alliances

According to James A. Eckert, assistant professor of marketing and supply chain management at Northeastern University, there are seven types of buyer/supplier relationships varying in degree of "trust, frequency of interaction, and commitment to the relationship."⁴⁸:

1. Non-strategic transactions
2. Administered relationship
3. Contractual relationship
4. Specialty contract relationship
5. Partnership
6. Joint Venture
7. Strategic alliance

In particular, many traditional defense contractors interviewed stated that the DoD tends to practice contractual relationships, which "reduce the need for direct communication."⁴⁹ As a result, managers on both sides must be keenly aware of the "contractual obligations to appropriately address key issues."⁵⁰ Solidifying this point, a senior contracts specialist for a large computer

applications firm stated that "a few years ago the Navy was interested in having an end of life buy back put in the system" so his firm had to "spend an inordinate amount of time explaining why we were not going to provide cost data, and why the regulation was in place describing that they did not need to." In the end the situation blew up and "the Navy contracting officer said she would rather buy a damn airplane than a commercial item if this is how the industry did business." He explained that things have gotten better, but he feels that rigidity is still apparent in the DoD, and that more flexibility is needed. Ultimately, contractual obligations allow an adversarial relationship to flourish between the DoD and its suppliers.

Consequently, the DoD must view supplier relationships more as

"The Navy contracting officer said she would rather buy a damn airplane than a commercial item if this is how the industry did business."

partnerships and strategic alliances and less as contractual obligations. Contractual relationships and the DoD's notorious

adversarial reputation promote a government procurement environment prime for contracting "hit-and-runs," according to some executives in industry. In contrast, in commercial partnerships "trust and commitment must be high," and such partnerships require "both parties to invest heavily in the relationship to prove their commitment."⁵¹

Government/supplier partnerships can develop into strategic alliances if/when the DoD develops "negotiation and

⁴⁸ Eckert, James A. "Best Practice Tips on Building Supplier Partnerships," www.fita.org/ioma/suppliers.html

⁴⁹ Ibid

⁵⁰ Ibid

⁵¹ Ibid

management strategies for each type of relationship and adapts their approach to the unique characteristic of each relationship.”⁵² This is accomplished through extensive relationship management. Also the DoD must analyze current partnerships with respect to the overall goals of the program, goals of other firms involved, and place a strong emphasis on trust, interaction, and communication on a peer level.

⁵² *ibid*

As a natural conclusion, the final focus, as prescribed by the DoD, tasked the research team to investigate aspects of risk or risk mitigation involved with our proposed recommendations/reforms. Ultimately, we feel that in an organization as large, diverse, and complex as the DoD it goes without saying that implementing far-reaching major change initiatives, such as those recommended in this brief report, will take time and are inherently risky. Specific to this issue of risk are three questions that still require considerable research to fully answer:

- 1) **Can the DoD transition to a more commercial way of doing business?**
- 2) **If the DoD embarks on this journey of reform, will there be a supply of hi-tech, military specific R&D to meet the demand?**
- 3) **Is it solely the responsibility of the DoD to reform and change the way it does business?**

In this conclusion we will consider the risks involved with each of these issues, summarize our past recommendations, and offer a road ahead.

1. Transition Risk

A common question posed throughout our study stemming from a general observation that "there has been a lot of talk, and not enough action" with respect to DoD acquisition reform initiatives is:

Given vast cultural, and structural rigidities, can the DoD transition to more commercial ways of doing business?

A) DoD Unique Transitional Challenges

As a corporate fellow at a major hi-tech firm was quick to point out "the DoD does not perceive itself nor does it operate as a corporate entity, instead it is a group of tribes and is ruled by tribal law." The DoD as an entity is comprised of multiple, stove-piped organizations. As is such, it would appear as if the does not always successfully leverage "its bigness in contracts." This lack of cohesion directly correlates to a difficulty with and resistance to uniformly implemented change.

Another well-seasoned commercial executive at a hi-tech firm succinctly summarizes the pessimism of some commercial firms by stating that the impediments to reform are "primarily cultural. There is a spirit of Teflon leadership that has grown up in DoD where no one actually has responsibility for a program for more than 24 or at the most 36 months so no one is truly accountable." In stark contrast, he adds, my company "has had the same CEO for over 24 years and we have just recently changed, (in my company) what would be equivalent to your MAJCOM commander. That gentleman was in place for over 10 years." Ultimately, the executive feels that "you have a much more permanent workforce that is

directly compensated for the quality of their decisions from a cultural standpoint” in the civilian world.

Finally, as highlighted in the RAND study and indicated in numerous interviews, critics “reason that the DoD’s unique mission requirements and substantial political constraints make ‘commercial business practices,’ whether interpreted as ‘textbook’ or ‘best,’ unsuitable for DoD.”⁵³

Furthermore, some critics also feel that given the current military environment, “complete elimination of such features as Mil-Specs, detailed contract requirements, and extensive governmental oversight removes necessary protections against waste, fraud, and abuse of taxpayer money.”⁵⁴

In particular, as implied by one government contracting executive at a commercial consulting firm, the structural rigidities are difficult if not impossible to overcome simply because “the government is really held to a higher standard and they must/ought to be, but it just really constricts them.”

Many policymakers feel that when public money is involved, transparency and oversight are lasting bedfellows.

B) Rise to the Challenge

Despite these reservations, we feel that the DoD *can*, should and must transition to become a “world-class customer---and its suppliers world class suppliers---by adopting business practices

characteristic of the very best commercial firm.”⁵⁵

First, to transition, the DoD as a whole must attempt to foster more cohesion among the competing entities of the DoD. As one corporate executive states, “seeking the vision, going for it, and implementing it along with change guidelines.” In particular, these change guidelines highlight that: 1) Change begins at the top, 2) It is the responsibility of the executives to lead change through communication, and 3) A firm must communicate change by “telling it, not selling it.”

Secondly, just as the force structure and composition of the military are ever changing, the potential for cultural change is also available within the near future. In particular, we agree with Dr. Marvin Sambur, that despite current cultural rigidities within the DoD, “real culture change is possible because of a projected 50% personnel turnover in the next 5 years.”⁵⁶ Ultimately, the DoD has the opportunity to start early and “identify, train and sustain a generation of innovators.”⁵⁷

Finally, the phenomenal successes of programs such as JDAM, JASSM, and AMRAMM “placed acquisition reform in the hands of good leaders,” resulting in not only a successful transition to better business practices, but also “in a 30 percent or better reduction in purchase price, and a projected reduction

⁵³ Permission Granted from RAND to cite this report: Lorell, Mark, “Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition” 2000,

www.rand.org/publications/mr/mr1147

⁵⁴ *ibid*

⁵⁵ Via RAND, Perry, William, “Specifications and Standards: A new Way of Doing Business,” Memorandum, from the Secretary of Defense, 29 June 1994.

⁵⁶ Dr. Marvin Sambur AQ Call 29 Nov 2001 HQ US Air Force

⁵⁷ *ibid*

in lifetime ownership cost.”⁵⁸ In a recent interview, Mr. Terry Little said, “There are a lot of people in the Department who want to say the jury is still out, or even that it’s failed – Maybe most people. I don’t believe the jury is out. We have three good examples of acquisition reform programs. The results are going to continue to be drastically different from previous programs.”⁵⁹

2. Supply-side Risk

With respect to R&D and hi-tech applications, our client is concerned that: *If the DoD embarks on this journey of reform will there be a greater supply to match demand?* From our interviews, there is an overall consensus that the reforms are inherently good for the DoD, but the likely increase in business from non-traditional hi-tech/R&D firms is difficult to determine.

A) Are These Reforms Enough?

Most of the interviewed firms overwhelmingly agreed that reforms are necessary. Reforms would enhance the DoD procurement process and make it more efficient and effective. However, many commercial firms were still concerned with barriers tied to *profitability*. For example, a former U.S. Army Colonel and current senior employee of a database applications firm

stated, “that these reforms would be useful from the DoD’s perspective. They would streamline DoD processes, but streamlining DoD’s processes would not encourage commercial corporations to further R&D relationships with DoD as long as the restrictions remain on ensuring profitability of those relationships.”

In particular, an R&D employee at a major consulting and database management firm said “even though on an individual basis we were very successful in government work or research, that research was leading us further and further into a more academic kind of world. And that had no bearing on the software market. So in a nutshell it is difficult to commercialize the software applications that the government wants/needs...in the end software engineering

initiatives or agendas are more decided by companies like Microsoft and what not, rather than government research.” In government work, the lack of profitability stems from, as the Colonel put it, “the inability to take the R&D money and sell it commercially.” In the end, commercial firms tend to shy away from doing business with the government because they are “in it for the money and nobody pretends that it is anything else. Nobody pretends that company A is cooperating with company B because it is the good thing to do and they like each other...it is for the bottom line,” and if the reforms do not directly effect profitability, the reforms will not attract more non-traditional R&D firms.

“Nobody pretends that company A is cooperating with company B because it is the good thing to do and they like each other...it is for the bottom line”

⁵⁸ Alder, Reuel S., “Quality Leadership is the Foundation for Successful Reform,” *Crosstalk* November 2001, www.stsc.hill.af.mil/

⁵⁹ Alder, Reuel S., “Quality Leadership is the Foundation for Successful Reform,” *Crosstalk* November 2001, www.stsc.hill.af.mil/

B) The Reforms Create a Supply

We agree that without focus upon profitability reforms, DoD work remains somewhat unappealing for many non-traditional defense contractors.

However, we feel that the recommendations posed in this report will positively affect the normal costs of doing business from a commercial standpoint and help foster a more mutually beneficial relationship between commercial industry and the DoD.

According to a detailed analysis of industry compliance costs by Coopers and Lybrand (C&L) and TASC (1994), "on average the DoD paid a regulatory cost premium of 18 percent."⁶⁰

Transitioning to a more commercial way of doing business could help to erase this cost premium. In addition to being passed on to the government, these cost savings could also be passed along to contractors in the form of more commercial like return on investment (ROI).

Many non-traditional, hi-tech firms would be willing to do business with the DoD if they would transition to a more commercial way of doing business. In particular, when asked if less oversight by the DoD would create a much larger supply and more willingness to do business with the department, a government accounts director for a hi-tech consulting and database applications firm stated, "I do, yes...well *absolutely*. My company is willing to do business with the government, we want all the government work we can get, but

the acquisition rules get in the way."

Without these rules many companies such as his would open up their laboratories, furthering their military specific R&D initiatives and overall business relationships with the DoD. Multiple firms are interested in more business relationships with the DoD. For example, the Integrated Dual-use Commercial Companies (IDCC) organization, comprised of member firms like Corning Incorporated, Dow Chemical Company, Dow Corning Corporation, W. L. Gore and Associates, Inc., Eastman Kodak Company and Honeywell, is dedicated to the following goals:

- To encourage and monitor the implementation of Federal Acquisition Reform legislation, regulations and practices that eliminates unnecessary and counterproductive requirements on member firms.
- To benchmark and share knowledge regarding government R&D contract activities to increase the effectiveness and efficiency of these operations.
- To promulgate public policy statements regarding Federal Government R&D.⁶¹

Organizations such as the IDCC are only the beginning. We conclude, that despite some valid profitability concerns, reforms will result in an increased supply of R&D/high-tech applications from both non-traditional and traditional defense contractors.

⁶⁰ Permission Granted from RAND to site this report: Lorell, Mark, "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000, www.rand.org/publications/mr/mr1147

⁶¹ www.idcc.org/goals.html

3. Responsibility of Reform Risk

Ultimately, the DoD must make the worthwhile transition to more commercial business practices, but the DoD should not bear all of the risk and not be held solely responsible for reform efforts. As a former U.S. Army contracting officer and current senior employee at large computer firm states, "reforms have to happen, there is no question to that, but the responsibility does not lie solely within the military. It is a two-way street...not 50-50 though instead it may be a two-way street with 3 lanes on the right and 1 on the left. In essence the military is responsible for 75% of the problem, but the industry is willing, able, and understanding that it must meet them at least 25% of the way."

Commercial firms understand that the DoD is held to a higher standard and must tread a fine line between granting contractors autonomy and requiring oversight in order to protect the public interest. Furthermore, commercial firms realize that if/when the DoD makes an effort to transition that the commercial industry must meet the DoD at least part of the way. The commercial world is able and flexible enough to make this effort.

Ultimately, the flexibility of the commercial world poses a great opportunity for the DoD to utilize some bargaining power. For example, the DoD can make a smaller scale adjustment in the way it does business for reciprocal consideration from

commercial firms. The DoD's size gives it instant leverage.

Finally, some officials within the DoD were concerned that by emphasizing commercial "best practices" and trying to attract non-traditional/hi-tech firms the DoD would jeopardize its valuable relationships with traditional defense contractors. *According to our research, this concern is unfounded.*

A top government contracts official at a major traditional defense-contracting firm felt that reforms aimed at increasing the efficiency with which commercial companies interact with the DoD would not affect their position within the

defense industry, but rather "enhance it." In fact, he went on to state that "the more non-traditional companies do business with the DoD, the more opportunities that defense companies such as (my company) will have in expanding their

subcontractor base, i.e. the same companies will likely be more willing to help companies in the defense industry by providing commercial solutions to our requirements."

Another senior executive at a major traditional military firm stated competition from non-traditional defense contractors is a favorable outcome "as that would mean that the Government has streamlined its procurement practices to the point that it would be an attractive customer to primarily commercial firms. That would enable current DoD contractors to reduce their costs of doing business in the effort to compete with these new entrants." In

"In essence, the military is responsible for 75% of the problem, but the industry is willing, able and understanding that it must meet them at least 25% of the way."

the end, reforms not only help non-traditional defense contractors enter the DoD market, but also bolster the competitiveness of traditional defense contractors. Lower costs and a streamlined process are beneficial to all involved parties.

4. Conclusion: Road Ahead

In this report we have concluded that in order for the DoD to successfully implement and transition to commercial best practices they must:

- 1) Develop a technical pricing expertise and train a cadre of negotiating experts in order to establish fair and reasonable prices in the absence of competition.
- 2) Utilize other transaction agreements and participate in more "pilot programs" to break down the barriers to entry for non-traditional commercial firms.
- 3) Institute multi-level frequent (informal) communication, advance technology links, and foster strategic alliances to diminish the DoD's adversarial

image in efforts to cultivate deep supplier relationships.

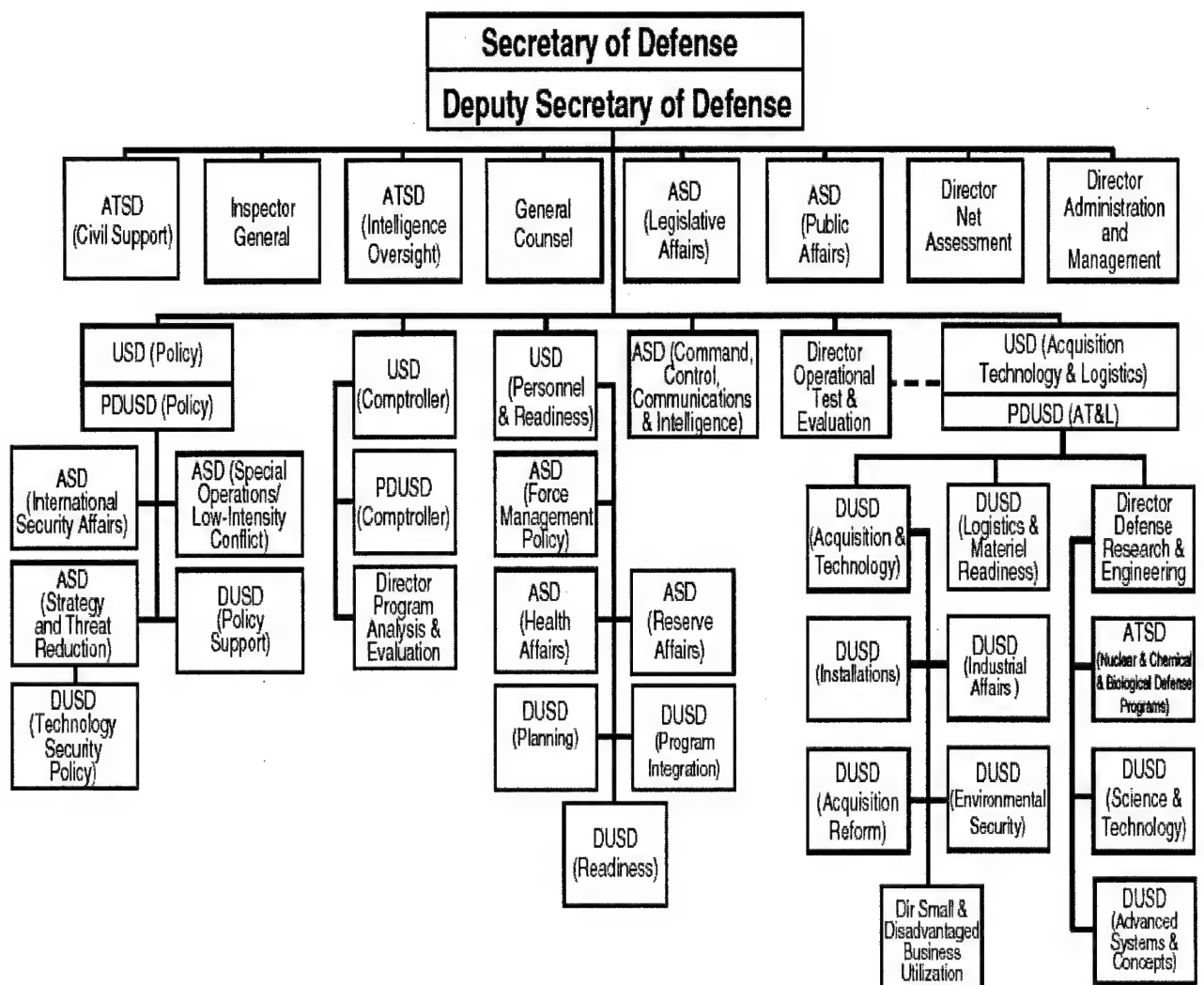
These recommendations are risky, but we have concluded that the risks are worthwhile. The transition to commercial best practices is possible and if the DoD successfully embarks on this journey there will be an increased supply/interest from non-traditional defense contractors in military specific R&D. The responsibility for reform lies with the DoD and commercial industry alike. Importantly, these reforms will not critically tarnish the DoD's current relationships with traditional defense contractors.

In the end, it is unlikely that reform will take place overnight. It is more likely that reforms will be instituted over time and will face considerable iterations along the way. The findings, recommendations and conclusions presented in this paper are just one step of many that are sure to occur within the government acquisition reform process. Much work remains to be done, but without a sense of urgency and a commitment to fix the system, the DoD will continue to see a divergence between its technical capacity and that of the commercial world.

Appendix A: Office of the Secretary of Defense Organizational Chart

<http://www.odam.osd.mil/omp/pubs/GuideBook/Pdf/Osd.PDF>

Office of the Secretary of Defense



Date: March 2001

Appendix B: Questions for Pentagon Interviews

PAE Research at the Pentagon: Questions

The format of this interview is broken down into three sections: 1) PAE relationship and commitment 2) Background information and 3) Problem specific clarification

PAE Relationship:

- 1) We are committed to providing you with a quality and comprehensive product specifically tackling the problem of ascertaining fair and reasonable pricing without reliance on certified cost and pricing data while at the same time gaining valuable exposure to the current and future acquisition process, with this in mind what are your specific expectations from us? (i.e. depth research, time commitment, finished product)
- 2) You have already given us some brief background information, a problem statement, and some helpful feedback on our PAE prospectus given that where do you foresee us adding the greatest value or what is our niche?
- 3) What is our role within the current DoD integrated product teams in relation to PBA? Are we the only ones investigating this specific problem or are working in conjunction with other research teams?

Background Information:

- 1) What has been the most significant acquisition reform in the last 5 years and why?
- 2) Despite a concentrated effort for acquisition reform in the past decade, what currently constrains the acquisitions process in getting weapon systems to the war fighter in a timely and cost effective manner?
- 3) Do you feel that TINA, cost accounting standards CAS, and material management accounting system MMAS are antiquated in regards to the DoD's desire to capture high-tech industry?
- 4) This question in two fold: On December 10 the Air Force opened its Acquisition Center of Excellence or ACE. ACE's primary mission is to help acquisition professionals cut through burdensome unproductive processes. ACE has established six lightning bolts that capture the new reform orientation of the Air Force what is the likelihood of success, of these reform goals, in the current operating environment? Are our regulatory constraints simply too much for reform initiatives such as these to prove successful (i.e. is it too much study and not enough action?)?
- 5) Would you like our recommendations to be DoD or Air Force specific?
- 6) What is our time-line for any policy recommendations that we have the current administration or would acquisition reforms be independent of changes in political administrations?

- 7) In your words could you briefly summarize the push towards evolutionary acquisitions?

Problem Specific Questions:

- 1) What are the requirements for the focusing of our research, are you interested in R&D, hardware, software or everything?
- 2) We are attempting to gather some premonitions that people have before we eventually come to our conclusions, What do you think is the greatest cultural and structural challenge that may face the DoD in implementing PBA?
- 3) Do you feel that implementing PBA will dissuade traditional defense contractors from doing business with the DoD?
- 4) Do you think that the changes that you're considering implementing will succeed in attracting non-traditional defense contractors? If they for some reason do not what is the fall back position for the DoD?
- 5) What analogies do you see between PBA and business relationships in the commercial world?
- 6) Some of the changes that may attract non-traditional defense contractors are structural or regulatory. How do you hope to attract non-traditional defense contractors who are simply afraid of the consequences associated with being non-TINA compliant?
- 7) In addition to some of the companies you listed in your feedback on our prospectus are there other commercial companies that you think it would be worthwhile to investigate? What specific companies do you hope to attract with these changes?

Appendix C: Traditional Defense Contractors

Policy Analysis Exercise – Interview Questions

TO: Traditional Defense Contractor

FROM: Christopher W. Rohe and Benton W. Shrewsbury

SUBJECT: Policy Analysis Exercise (PAE) Interview Questions

DATE:

1. In your estimation, what is the current health of the defense industry?

2. What is your company's impression of Price Based Acquisitions (PBA)? Do you consider it a risky reform for the DoD?

3. How does your company obtain fair and reasonable pricing with the DoD?

4. How does your company achieve fair and reasonable pricing with its own subcontractors?

5. How has your company changed its methods for obtaining fair and reasonable pricing in the face of reforms within the government procurement process?

6. Does your company feel that reforms aimed at increasing the efficiency with which commercial companies interact with the DoD will adversely affect its position within the defense industry?

7. Is competition from non-traditional defense contractors a favorable outcome for your company? Why/Why not?

8. What reforms do you believe are necessary to make the DoD more attractive? Do you believe that these reforms are possible/plausible?

9. Given the nature of our study is there anything that you feel we did not cover adequately?

Appendix D: Contractor's Exiting the Industry

Policy Analysis Exercise – Interview Questions

TO: Contractors Exiting the Industry

FROM: Christopher W. Rohe and Benton W. Shrewsbury

SUBJECT: Policy Analysis Exercise (PAE) Interview Questions

DATE:

1. What are the overarching reasons that your company has decided to decrease operations with the DoD or has chosen to completely withdrawal from a business relationship?

2. If you cannot identify any specific reasons, what were some frustrating aspects of a business relationship with the DoD?

3. What, in your opinion, is the single most important difference between doing business with the DoD and other commercial companies?

4. Did your company ever attempt to affect change within the government procurement process before deciding to withdrawal from the industry?
 - a. If so, what barriers prevented change from occurring and in your company's estimation where does the responsibility lie for reform?

- b. Has the DoD been unwilling or unable to compromise on specific problems that might have encouraged your company to continue its former relationship with the DoD?

- c. Is there anything that the DoD might be able to do within its structure, regulation requirements or culture to attract your company to increase its operations within the defense industry?

5. As indicated in the attached e-mail certified cost and pricing data is required by law for all government cost-based contracts due to the Truth in Negotiations Act (TINA). The purpose of TINA is to establish an equitable relationship between the USG and contractors in contract negotiations by requiring contractors to submit cost or pricing information that might prove germane to costs associated with contract performance. "TINA, as amended, and the implementing procurement regulations require prime contractors and subcontractors to submit cost or pricing data to the USG and to certify that, to the best of their knowledge and belief, the data submitted are accurate, complete and current."¹

In accordance with TINA, cost or pricing information or data includes all facts that buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data is deemed as factual or verifiable. Currently, TINA applies to all negotiated prime contracts expected to exceed \$500, 000 or a modification of a negotiated or sealed bid contract involving a price adjustment exceeding \$500,000, with similar conditions existing for subcontractors working in conjunctions with the prime contractor. Ultimately, TINA compliance is an important aspect of government contracting, where the slightest defect or omission, regardless of intention, is subject to a reduction in contract price or investigation of possible fraudulent activity on the part of the contractor. With all this in mind:

- a. How does your company achieve the equivalent of fair and reasonable pricing in commercial operations?

- b. How does your company ensure that it is not the victim of “price gouging” and profiteering by companies with whom you do business commercially and what aspects of your business practices might the DoD apply to its commercial operations?

8. What reforms do you believe are necessary to make the DoD more attractive? Do you believe that these reforms are possible/plausible?

9. Given the nature of our study is there anything that you feel we did not adequately cover?

Appendix E: Non-Traditional Defense Contractors

Policy Analysis Exercise – Interview Questions

TO: Non-traditional Defense Contractors

FROM: Benton W. Shrewsbury and Christopher W. Rohe

SUBJECT: Policy Analysis Exercise (PAE) Interview Questions

DATE:

1. Has your company ever been approached by the DoD for contracts associated with Research and Development or other high tech applications?

2. Has your company ever **actively** sought a contract, as mentioned above, with the DoD? Why or why not?

3. Assuming your company would like to do more business with the DoD in the realm of research and development or cutting edge technology, what currently impedes such a relationship? What do you deem the barriers to entry?

4. What, in your opinion, is the single most important difference between doing business with the DoD and other commercial companies?

5. Where do you feel the responsibility lies for reform that might make business relationships with the DoD more acceptable? Is it necessary for the DoD to change its regulations/structure/culture or could your company actively alter business practices to engage in research and development with the DoD?

-
6. What has been the greatest deterrent to a possible lack of research and development/high tech operations with the DoD? Do profitability constraints or risk/responsibility associated with DoD contracts dissuade your company from establishing a more involved business relationship with the DoD?

-
7. As indicated in the attached e-mail, certified cost and pricing data is required by law for all government cost-based contracts due to the Truth in Negotiations Act (TINA). The purpose of TINA is to establish an equitable relationship between the USG and contractors in contract negotiations by requiring contractors to submit cost or pricing information that might prove germane to costs associated with contract performance. "TINA, as amended, and the implementing procurement regulations require prime contractors and subcontractors to submit cost or pricing data to the USG and to certify that, to the best of their knowledge and belief, the data submitted are accurate, complete and current."¹

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- a. How does your company achieve the equivalent of fair and reasonable pricing in commercial operations with its subcontractors or business partners?

- b. How does your company ensure that it is not the victim of “price gouging” and profiteering by companies with whom you do business commercially and what aspects of your business practices might the DoD apply to its commercial operations?

8. If there were less oversight by the DoD do you feel that there would be more of a willingness to do business with the Department? Would less oversight be a mutually beneficial solution?

9. Off the top of your head can you think of any sole-source relationships that you have with another commercial firm that is analogous to the R&D relationship that you or other firms may have with the government? What are the key differences in terms of price analysis requirements and what type of due diligence is required in these relationships? How do you ascertain fair and reasonable pricing?

10. How does your company manage change and work with your suppliers on a long-term basis?

11. What reforms do you believe are necessary to make the DoD more attractive? Do you believe that these reforms are possible/plausible?

12. Given the nature of our study is there anything that you feel we did not cover adequately?

Appendix F: DoD and Commercial Comparison

<http://www.dsmc.dsm.mil/jdam/case/case4.htm>

Ignols, Cynthia "Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM)," May 1998. Defense System Management College (DSMC).



DoD and Commercial Comparison

	<u>DoD Historical</u>	<u>Commercial</u>
Buyer/Seller Relationships	Adversarial, Opportunistic	Collaborative, Long Term
Buyer Specification	Detailed "How-Tos"	End-Item Performance
Buyer In-Process Oversight	Lots (With Flow Down)	Little (Without Flow Down)
Primary Award Criteria	Technical Promises and Lowest Cost	Past Performance and Best Value
Data and Reporting	Extensive and Formal	Minimal, by Exception and Informal
Basic for Negotiation	Costs	Price
Development Contracts	Cost Type	Fixed Price

Exhibit VII

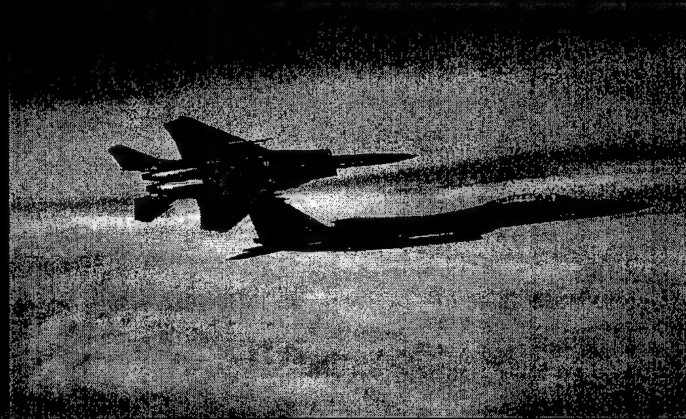
Price-Based Acquisitions:

**Effectively transitioning to more business oriented
Commercial practices**

Submitted To:

Mr. Richard K. Sylvester

Deputy Director, System Acquisition



Prepared by:

Christopher W. Rohe

Candidate for Master in Public Policy

John F. Kennedy School of Government, Harvard University

And

Benton W. Shrewsbury

Candidate for Master in Public Policy

John F. Kennedy School of Government, Harvard University

Advisor: Professor Stephen A. Kelman

PAC Leader: Professor David Lazer

April 2, 2002



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AFMC	Air Force Materiel Command
AMRAAM	Air-to-Air Missile
AUPP	Average Unit Procurement Price
B2B	Business to Business
CAS	Cost Accounting Standards
C&L	Coopers & Lybrand
CMI	Commercial-Military Integration
DAPP	Defense Acquisition Pilot Program
DARPA	Defense Advanced Research Project Agency
DFARS	Defense Federal Regulation Supplement
DoD	Department of Defense
DOSD	Deputy Secretary of Defense
DSMC	Defense Systems Management College
EDI	Electronic Data Interchange
FAR	Federal Acquisition Regulation
IDCC	Integrated Dual-use Commercial Companies
IPT	Integrated Product Team
JASSM	Joint Air-to-Surface Stand-Off Missile
JDAM	Joint Direct Attack Munitions
JTR	Joint Travel Regulations
KSG	Kennedy School of Government (Harvard)
MAJCOM	Major Command (USAF)
Mil-Specs	Military Specifications and Standards
Mil-Std	Military Standard

MPP	Master in Public Policy
OSD	Office of the Secretary of Defense
OT	Other Transactions
OUSD(AT&L)	Office of the Under Secretary of Defense for Acquisition, Technology and Logistics
OUSD/AI	Office of the Under Secretary of Defense for Acquisition Initiatives
PAC	Policy Area of Concentration
PAE	Policy Analysis Exercise
PBA	Price Based Acquisitions
POC	Point of Contact
R&D	Research and Development
RFP	Request for Proposal
ROI	Return on Investment
SOW	Statement of Work
SPO	Systems Program Office
TINA	Truth in Negotiations Act
TSWG	Technical Support Working Group
WCMD	Wind Corrected Munitions Dispenser
USD(AT&L)	Mr. E.C. "Pete" Aldridge, Under Secretary of Defense for Acquisition, Technology and Logistics
USG	United States Government

This Policy Analysis Exercise (PAE) could not have been possible without the continuous support of many key figures in hi-tech commercial firms, traditional government contracting firms, and firms exiting the defense industry. Many professionals took countless hours out of their busy schedules to speak with us, return our calls, and fax/mail critical information on company standards, practices, and experiences. We graciously thank all of you for your cooperation, patience, and insightful comments.

In particular, we would like to briefly mention several people that were most helpful throughout the process, but regret that we cannot acknowledge all those involved as a result of our non-attribution policy. Professor Steve Kelman, our PAE advisor, provided much needed technical/academic expertise, real world knowledge, and commercial points of contact (POC). Without Professor Kelman's guidance our PAE never would have come to fruition. Our Policy Area of Concentration (PAC) Seminar leader, Assistant Professor of Public Policy David Lazer spent numerous hours with us offering professional guidance, direction, and support. Mr. Terry Little, former JASSM Manager and current director of the newly formed Air Force Acquisition Center of Excellence, offered his unique and "out of the box" expertise as a distinguished champion of acquisition reform. Professor Ira Jackson, Director of the Kennedy School of Government's Center for Business and Government, opened his schedule and Rolodex to us at a critical time in our research process.

Major General William Bond, USA, Ms. Barbara Brygider, Mr. Dick Brown, Ms. Carol Covey, Ms. Deidre Lee, Ms. Donna Richbourg, Colonel Mike Brown, USA, Captain (select) Gregory Sevensing, 2Lt Bruce Clarke, 2Lt Chris Nielsen and 2Lt Erik Martin were extremely generous with their time and provided valuable insight on current and past acquisition initiatives and a working level knowledge of the DoD contracting, acquisition, and government procurement process.

Our PAE client, Mr. Richard K. Sylvester, Deputy Director, System Acquisition, graciously gave us much of his time and went out of his way to put us in touch with key individuals within OSD, the government acquisition world, and the private sector.

Our PAE would not have been possible without the help and support of all of the aforementioned individuals. *Thank you.*

Central Questions

This report addresses the following questions for the Office of the Director, Acquisition Initiatives:

I

How do commercial companies establish fair and reasonable prices in the absence of competition with respect to research and development/high-tech applications?

II

What are the barriers to entry and what reforms are necessary to attract more non-traditional commercial companies to the DoD acquisition system?

III

How do commercial companies establish and foster cooperative, long-term supplier relationships with respect to research and development/high-tech application contracts?

Background

Commercializing and reforming the Department of Defense (DOD) acquisition process is *paramount* to preserving the national security of the United States. A healthy and competitive U.S. Defense Industry lends itself to a well-equipped and capable combat force.

Despite current budgetary increases and a focused emphasis on readiness, the U.S. military recently experienced a "13-year-long trend of real defense spending decline," marking "a 38 percent real reduction in spending from defense budgets in the mid-1980s."¹ The real dollar budgetary decline and a push for quicker deployment of cutting edge technology highlight the need for a more efficient and effective DoD acquisition system.

However, critical, high-value, military specific, sole-source procurements are often negotiated as cost-based contracts. In order to adapt to a changing defense environment, the DoD has explored alternative contracting processes such as Price-Based Acquisition (PBA), wherein "price" is established on a variety of flexible conditions.

Regulatory, cultural and structural challenges confront the DoD in its efforts to attract non-traditional defense contractors to the prospect of conducting business with the DoD through processes such as PBA.

As is such, this analysis presents major findings and puts forth recommendations with respect to the regulatory, cultural and structural challenges facing the DoD in its efforts to attract non-traditional research and development/high-tech applications.

¹ National Security Report, "U.S. Budget: Walking the Tightrope Without a Net" April 1997. pg1

Major Findings

A survey, formulated with respect to the three central questions listed previously, of numerous commercial companies normally disassociated with the DoD or classified as non-traditional defense contractors revealed a number of concerns with respect to contracts linked to DoD interests:

I

1) DoD Sophistication: With respect to research and development, a number of commercial firms expressed a concern with the internal capacity of the DoD to properly evaluate labor rates and define the value of potential research and development breakthroughs. Put frankly, many within commercial industry do not believe that the DoD has the sophistication that other commercial companies possess and require for contracts associated with research and development.

II

2) Intellectual Property: Many commercial firms expressed explicit concern with the manner in which the DoD governs its rights to intervention and oversight of research and development contracts regarding intellectual property. A number of commercial firms are absolutely opposed to contracts with the DoD that are governed by the current intellectual property statutes.

3) Excessive Contract Participation Conditions: The regulatory and structural requirements mandated by statute and the cultural conflicts between commercial industry and DoD contracting officers are debilitating

impediments to research and development contracts. In general, many commercial companies would often rather do business with anyone else besides the DoD. Furthermore, apart from situations of fundamental national security, research and development business ventures with the DoD are often characterized as simply not profitable enough for non-traditional defense contractors to dedicate the time and resources.

III

4) Adversarial Relationship: A number of the commercial companies interviewed throughout the research process expressed a concern that the DoD was not interested in long-term, mutually beneficial relationships. Ultimately, a lack of informal communication results in mistrust towards the DoD on the part of smaller commercial companies, constraining potential partnerships.

Recommendations

Based upon the major findings listed above and a desire on the part of the DoD to adopt more commercial practices in the realm of research and development, this report puts forth the following recommendations (with respect to the questions posed) to successfully attract more non-traditional defense contractors:

I

1) Develop a Technical Expertise: If the DoD hopes to equitably operate with commercial firms, it must first develop an expertise with regard to the pricing nature of research and development.

Outmoded data and ill-trained personnel hamper the research and development process.

2) Train a Cadre of Negotiating

Experts: Assuming the DoD is able to operate outside of the normal environment that currently constrains its flexibility, individuals trained in aspects of negotiation are imperative to a healthy relationship between the DoD and its commercial partners. Effective negotiators making use of cogent data will be better suited to make decisions about the progress of specific projects.

II

3) Make Greater Use of "Other Transactions" and Pilot Programs:

Currently, the DoD is severely hampered by structural and regulatory requirements. Commercial industry is characterized by flexibility and change. Apart from a complete reversal of government statute, the DoD can only hope to attract non-traditional, high-tech firms through the use of exceptions, like Other Transaction agreements and "pilot programs," which allow for freer business practices.

III

4) Build Strategic Partnerships: The DoD cannot afford to approach commercial companies with contracts that do not provide mutual benefit. Research and development contracts within commercial industry are characterized by trust and understanding, developed through informal communications, and fostered by state-of-the-art technology links. Research and development/high-tech applications are inherently risky and do not provide a

guaranteed payoff. The DoD must nurture its business partnerships or technological benefits will prove less fruitful and future partnerships will prove more difficult to manage.

Conclusions

As with any major institutional change, these recommendations do involve risk. In particular, the DoD faces three issues before the Department can institute reforms on the road to *acquisition excellence*:

- 1) Can the DoD transition to a more commercial way of doing business?**
- 2) If the DoD embarks on this journey of reform will there be a supply of hi-tech, military specific R&D to meet the demand?**
- 3) Is it solely the responsibility of the DoD to reform and change the way it does business?**

With respect to these questions we have concluded that the assumption of the aforementioned risks are worthwhile. First, the DoD's desired transition to commercial best practices is possible as proven by the overwhelming success of previous pilot programs such as JDAM and JASSM. Second, if the DoD successfully embarks on this journey there will be an increased supply and interest from non-traditional defense contractors in military specific R&D as indicated by our interview findings. Third, the responsibilities for reform do not solely lie with the DoD. Lastly, these reforms will not tarnish the department's current relationships with traditional defense contractors.

In the end, we feel that more study is needed on the inherent risks involved with implementing the proposed reforms. However, according to our research, the aforementioned recommendations are not only plausible, but also necessary to maintain the DoD's role as the greatest military force on the planet.

The Client

Our client, Mr. Richard K. Sylvester, Deputy Director, System Acquisition, works within the Office of the Director, Acquisition Initiatives. The Office of the Director, Acquisition Initiatives supports the Under Secretary of Defense (Acquisition, Technology and Logistics) (USD (AT&L)) in all matters relating to DoD acquisition systems and research and development (see appendix A for organizational chart).

Specifically, the office helps to “establish and publish policies and procedures governing the operations of the DoD Acquisitions System and the administrative oversight of defense contractors.”² According to Mr. E.C. “Pete” Aldridge (USD(AT&L)), this office has recently had a change of focus moving away from

“acquisition reform” to “acquisition excellence...concentrated on implementing acquisition reform initiatives.”³ Secretary of Defense Donald H. Rumsfeld reiterates the importance of our client’s shift from “reform to excellence,” or from “tail to tooth,” by stating that he is launching a campaign to shift DoD resources from the bureaucracy to the battlefield,” and

further emphasizing that this shift “is a matter of National Security.”⁴

Mr. Aldridge clearly and succinctly affirms AT&L’s objective by stating that “We are not in the process business. We are not in the technology business. We are not in the administrative business. We are no more in these businesses than a paramedic is in the ambulance business. Every one of us is in the war-winning business and life-saving business, and it’s deadly serious work.”⁵ With this in mind our client’s five goals to achieve excellence within government acquisitions are to⁶:

- Achieve credibility and efficiency in the acquisition and logistics support process
- Revitalize the quality and morale of the AT&L workforce
- Improve the health of the Defense industrial base
- Rationalize the weapon systems and infrastructure with the new Defense strategy
- Initiate high leverage technologies to create weapons systems and strategies of the future

“...Each one of us is in the war-winning business and life-saving business, and it’s deadly serious work.” —Mr. Pete Aldridge (USD(AT&L))

² <http://www.defenselink.mil/pubs/ofg/>

³ <http://www.defenselink.mil/pubs/ofg/>

⁴ “Acquisition and Logistics Excellence Week: Shift from Tail to Tooth,” *AR Today* September/October 2001, Vol. 6, No. 5

⁵ *ibid*

⁶ *ibid*

Understanding our client and the USD(AT&L) road-map for future government acquisition success was critical in embarking on this study and determining the nature and the scope of the problem at hand.

Nature and Scope of the Problem

"The U.S. defense establishment must be transformed to address our new circumstances. The need to swiftly introduce new weapons systems is clear." Donald H. Rumsfeld, Secretary of Defense (Confirmation testimony, January 11, 2001)

The United States Government (USG) is interested in reducing the barriers to business operations that have resulted between non-traditional defense contractors and the DoD. The DoD desires the ability to access cutting edge technology available on the commercial market and attract commercial companies into business partnerships with the DoD. Currently, many non-traditional defense contractors are hesitant to do business with the DoD because of compliance requirements, like TINA, associated with conventional cost-based contracts. The objective of the DoD, in relation to defense contracting, is to process much needed capability to the war fighter quickly, cost effectively, and at a reduced risk.

"If we (DoD) do not change the way we do business it could mean the next war!"

Since the early 1990's the DoD has made many strides in the right direction and forged ahead in the new era of acquisition reform. For example, Integrated Product Teams (IPT) within the OSD have challenged the reform objectives and the feasibility of implementing Price Based Acquisitions (PBA) for DoD contracts. In particular, price-based (as opposed to cost-based) acquisition "is essentially making

purchases without reliance upon the supplier's cost information. Price-based Acquisitions (PBA) is a way of doing business that begins with identification of a need and flows through post-award activities. The decision to use a price-based approach is driven by choices made during the Requirements

Definition process, is heavily dependent on risk mitigation and the chosen acquisition strategy, and is aided

by competition or alternatives. In its purest form, PBA results in a firm-fixed-price (or fixed-price with performance incentives) contract and a fair and reasonable price is established without obtaining supplier cost data.⁷ Besides a transition towards PBA, recent DoD Acquisitions Reform measures have established iterative (time-phased or block) operational requirements for DoD contracts that will be acquired through evolutionary acquisition and spiral development and a shift towards more Civil-Military Integration (CMI).

Still, many key figures in the government acquisition world feel that more research on "best business practices" is needed and that the DoD must not only "be innovative and open to change," as Dr. Marvin Sambur recently stated at an AQ call at Headquarters, U.S. Air Force, but they must continually "mine the private sector for ideas".⁸

⁷ "Price Based Acquisition," DON Acquisition www.acq-ref.navy.mil/topic.cfm?topic_id=17

⁸ Dr. Marvin Sambur AQ Call 29 Nov 2001 HQ US Air Force.

This problematic reality is by no means trivial. One high ranking military official during an office call with his acquisition elites was quoted as emphatically stating, "If we do not change the way we do business it could mean the next war!"

High value, military specific, sole-source procurements have traditionally been negotiated as cost-based procurements using certified cost or pricing data. With a cost-based approach, there is little incentive to a contractor to reduce the price of an item because profit is based on a percentage of the cost. With acquisition reform and a need to attract non-traditional contractors, the DoD has explored alternative contracting approaches such as Price-Based Acquisition (PBA), wherein "price" is established based on a variety of conditions. In the place of certified cost or pricing data, Contracting Officers are using exceptions and price analysis to determine price reasonableness. Still, auditors are generally uncomfortable with this approach. Certified cost and pricing data is required by law for all government cost-based contracts that are governed by the Truth in Negotiations Act (TINA)⁹.

As a result, the DoD is faced with the following problem: *How to ascertain*

fair and reasonable price without reliance on certified cost and pricing data?

Commercial industry

negotiates contracts without resorting to

TINA. The Department is interested in how commercial companies establish fair and reasonable prices in the absence of competition. In particular, *when there is only one source of supply, what due diligence is placed on ascertaining a fair price?* Furthermore, the DoD is ultimately concerned with making themselves more attractive in the eyes of non-traditional defense contractors. Despite recent changes in the processes and many success stories, the DoD is still unable to entice these non-traditional firms. What then, from the perspective of the nontraditional defense contractor, *currently serve as barriers to entry or impede the relationship between the DoD and non-traditional defense contractors?*

As a result of cultural and structural rigidities, managing change within the context of the DoD is a difficult, complex and extremely risky process. Nicolo Machiavelli captures the essence of change and the feelings likely shared by commercial corporations and the

DoD in his literary masterpiece *The Prince*. "And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions and lukewarm defenders in those who may do well under the new." Nicolo Machiavelli, *The Prince*

to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions,

"And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions and lukewarm defenders in those who may do well under the new." Nicolo Machiavelli, The Prince

⁹ Price Based Acquisition---Statement of the Problem. Richard Sylvester, November 11, 2001.

and lukewarm defenders in those who may do well under the new.”¹⁰ Thus, in an effort to mitigate the risks involved with these potential reforms and maximize positive benefits, the DoD is curious to know whether a removal of barriers to entry would result in a greater supply of commercial R&D. Finally, in order to take advantage of commercial best practices, *how do commercial companies manage change, mitigate risk, and work with suppliers on a long-term basis?*

Although we do not speak to these questions in the order listed above, the report addresses these questions in turn throughout the course of the paper.

¹⁰ Dr. Marvin Sambur AQ Call 29 Nov 2001 HQ US Air Force. “The Prince,” Nicolo Machiavelli. 1505 A.D.

The Modern Military Procurement System: "It's Been A Long Journey"

To say that the military procurement system has traveled down a long and winding road of reforms in its 200 plus year history is a drastic understatement. For example, even as early as 1777, "General George Washington was forced to commission his own cannon-casting facilities because private manufacturers were unwilling to accept the contract."¹¹

The more things change, the more they stay the same. Today, "recurrent problems with inadequate, underperforming and overly expensive weapon systems," have resulted in many recent reforms to the DoD procurement system.¹² In particular, the problems with the current system can be traced back to the years following World War II, when the military and civilian industrial bases diverged, resulting in separate research and development (R&D) and production markets.¹³

¹¹ van Opstal, Debra, *Road Map for Federal Acquisition (FAR) Reform: Report of the CSIS Working Group*, Center for Strategic and International Studies, Washington, D.C., 1995. (via RAND Report "Cheaper, Faster, Better?: Commercial Approaches to Weapons Acquisition")

¹² Permission Granted from RAND to site this report: Lorell, Mark, "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000,

www.rand.org/publications/mr/mr1147

¹³ *ibid*

Although military R&D capabilities far exceeded their civilian counterparts in the years directly following the war, the

civilian market caught up with and surpassed the military capability for hi-tech applications by the 1970's. After the Cold War, defense budgets declined

and the military was forced to tighten its belt. Irrespective of the political dynamics, procurement costs continued to grow.

According to a recent report published in 1998, the DoD and the commercial world drastically differ in business practices. In particular, in DSMC's *Implementing Acquisition Reform: A Case study on Joint Direct Attack Munitions (JDAM)*, a team, under the direction of Mr. Terry Little, succeeded in summarizing the differences between the DoD and commercial industry and indicated that the divergence since World War II had never been more pronounced (see Appendix E).

Individuals in government and in the commercial world agree that the divergence is at least partly to blame for many of the current hardships facing the government procurement system and firmly trust that "if the United States is to maintain a defense establishment adequate to the wide range and dynamic nature of future threats to national

Today, "recurrent problems with inadequate, underperforming and overly expensive weapon systems," have resulted in many recent reforms to the DoD procurement system."

security, steps must be taken to make national security affordable.”¹⁴

Specific to our study, these steps included analyzing the civilian market for answers.

Our report will shed some additional light on the central questions posed by our client, Mr. Richard Sylvester, and help the DoD in its effort to positively effect change in the government procurement system on the road to acquisition excellence.

¹⁴ Higgins, Guy (CAPT. USN) “CAIV—An Important Principle of Acquisition Reform” *PM* Jan-Feb 1997

The information in this report was acquired through interviews with government program managers and other government officials, industry officials, and academics. In particular, we would like to reiterate that in an effort to gain unfettered access into the dynamic that exists between commercial companies and the DoD and to protect those individuals that have been kind enough to provide the researchers with candid and thought provoking opinions, all information that was forwarded by points of contact within commercial industry or garnered by this analysis exercise in its dealings with commercial industry has been deemed non-attributable and held within the strictest confidence by the researchers.

As the DoD is the client in this case, opinions put forth by points of contact within the DoD will not be held to the same level of non-attribution. Information that is gathered in various interactions with the client, in person, over E-mail, via mail and in telephone conversations has been attributed to the individuals responsible for such information.

With this attribution policy in mind our research was divided into three phases:

- 1) Background analysis
- 2) Client visit
- 3) Commercial industry research

The first phase of our research, background, relied mostly upon published materials and has been described in detail in the preceding sections. As is such, the following

paragraphs will briefly describe the last two phases as a reference point and context for the remainder of report.

Client Visit

In addition to initiating initial contact with the client over the telephone and via E-mail, the research team conducted a field exercise at the Pentagon in Washington DC on the 12th and 13th of December, 2001. The field exercise, in addition to gathering information and conducting interviews, allowed the research team the opportunity to meet various members of the client team to include Mr. Richard K. Sylvester (Deputy Director, System Acquisition), Ms. Diedre Lee (Director, Defense Procurement-DoD), Ms. Donna S. Richbourg (Director, Acquisition Initiatives-DoD), Ms. Carol Covey (Deputy Director, Cost, Pricing and Finance), Ms. Barbara Brygider (Senior Policy Analyst), and Mr. Richard Brown (Procurement Analyst). Throughout the course of the two-day interview process we were able to gather valuable information concerning the Policy Analysis Exercise relationship and commitment, background information on the problem and specific information concerning problem focus. An example of the interview questions can be referenced in Appendix B. In conclusion, this research trip enabled us to construct a logical "way ahead" for determining how to approach the upcoming commercial industry interviews.

Commercial Industry Research

Following the research field work at the Pentagon, the research team was able to

construct a cogent set of survey questions for various commercial companies that might aid the DoD in its efforts to ascertain information on the central questions posed by the client (Mr. Richard Sylvester). A number of commercial companies were identified as potential sources of information. From this collection of commercial companies, the individual companies were divided into three separate subcategories. Each commercial company was identified as a traditional defense contractor, a non-traditional defense contractor that had reduced its operations with the DoD, or a non-traditional defense contractor with little connection to the DoD in the realm of high tech/research and development contracts.

Ultimately, we interviewed over 30 contacts and referenced a wide array of published materials, internal company materials, case studies and other sources of information. Of particular interest were:

- The Defense Science Board Task Force's Final Briefing "Preserving a Healthy and Competitive U.S. Defense Industry to Ensure our Future National Security," November 2000
- The Defense Systems Management College's (DSMC) "Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM)" May 1998
- RAND's "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000

- DSMC's *Risk Management Guide for DoD Acquisition* 4th ed. February 2001
- Dr. Jacques S. Gansler's, *Defense Conversion: Transforming the Arsenal of Democracy*, 1995

We eventually conducted four rounds of interviews. Initially, we contacted members within each of the three categories for some basic background information. We used this information to spur more research and consulted our advisor(s) and client in order to formulate a focused PAE proposal. Then we conducted a second round of interviews only including those individuals in the traditional and non-traditional category that provided specific insight to "fair and reasonable pricing." We used this information to narrow the field down further and in the third round of interviews we focused solely on the non-traditional defense contractors. Finally, we contacted numerous hi-tech companies and spoke with individuals intimately involved with either contracted R&D or company specific R&D that is contracted out on a sole-source basis. This allowed us to analyze a number of specific, analogous commercial-to-commercial sole-source R&D situations. The core of our findings is based on the information gathered in the last two rounds of interviews.

(Survey questions for traditional defense contractors, non-traditional defense contractors that have reduced operations with the DoD, or non-traditional defense contractors with little connection to the DoD in the realm of high tech/research and development contracts are included in Appendices C, D and E)

Question: How do commercial companies establish fair and reasonable prices in the absence of competition with respect to research and development/high-tech applications?

Major Findings

The first and underlying query put forth by the DoD with regards to commercial practices asks the fundamental question of how the commercial world establishes the equivalent of fair and reasonable pricing in its research and development activities without reliance upon certified cost and pricing data. The commercial business world and the world of government contracting are vastly different systems. An investigation of the manner in which the two entities achieve the same end, fair and reasonable prices, is sufficient to reach the conclusion that both engage in wholly dissimilar business practices.

However, in our efforts to investigate characteristics of commercial firms engaged in research and development activities we uncovered two common findings with respect to these unique business relationships. In order to achieve the equivalent of fair and reasonable pricing, commercial firms establish exhaustive, internal, technical expertise concerning research and development pricing rates and engage in thorough, informal negotiations with prospective business partners before establishing a price for potential services.

Commercial firms that engage in R&D activities with business partners possess

a level of sophistication concerning pricing rates, project milestones and development timetables that help to make the process much easier to manage. According to a contracting specialist at an established commercial firm, "There is better understanding of the forces that impact price by our buyers than we perceive the average government buyer has. The conduct of market research and an in-depth understanding of the product and processes help to focus our buyers on price reasonableness."

Another employee at a different commercial firm, described the elements of success that allowed his company to engage in a mutually beneficial R&D venture with a cooperative commercial company as such, "They were sophisticated enough to buy the R&D and we could make internal assessments about the ballpark number and make a reasonable decision concerning value.

We knew labor rates based upon experience and could control the cost of the contract based upon the number of hours that were ordered." Market research and experience help commercial firms

determine a fair and reasonable price for whatever ventures the firm chooses to undertake.

"There is better understanding of the forces that impact price by our buyers than we perceive the average government buyer has. The conduct of market research and an in-depth understanding of the product and processes help to focus our buyers on price reasonableness"

Compensation for research and development is difficult to determine, but commercial companies across multiple industries claim that judicious market research on the part of the buyer is the only way to secure a fair price. In addition to in-house estimates, commercial firms also make better use of competitive published price lists and comparisons of rough yardsticks to determine gross inconsistencies. To quote an employee at a high-tech, commercial firm, "The most you should ever pay is what it would cost you to do it on your own."

The determination of "fair and reasonable" with respect to commodities provides a much simpler situation for price determination than prices associated with research and development. Research and development is inherently risky. In describing how his company operated in a research and development contract with a large pharmaceuticals company an employee at a research-oriented firm said, "We know the labor rates and can compare them to different providers. We know what it costs to pay for a graduate student and what it costs to pay a professional researcher. You need to rely on your technical information and fund the program incrementally. Basically, you're paying for time with no guarantees."

Pricing databases and savvy market research are fundamental to the specific nature of pricing a labor hour explicit to a research and development contract, but the process of determining just how many hours to contract towards a project is an even finer skill to master. When

asked how to determine the fairness and reasonability of a R&D venture, one manager at commercial firm noted that, "Technical managers have accountability standards of their own. These include consideration of project specific milestones and money put into a project," in addition to the quantitative nature of determining fair labor rates.

Often times, milestones in commercial industry are dictated by profitability considerations. Project timetables are important to any project, but if the marginal benefit of further development does not outweigh the marginal cost, the end goal of profitability could be jeopardized. As quoted by an employee associated with a large software development firm, "The major test that we use that is non-existent in government is operating margins. Companies watch margins on an almost daily basis. If a company is running a 35% positive margin between costs of goods sold and sales revenue, and those are historically very high margins, and if you look at a pricing model that says it is going to cost me \$95 on every \$100 of revenue on this product then there is something wrong... That would be a signal that either the development costs are too high or the pricing is too low."

In addition to the development of internal technical expertise on rates and the careful consideration of project milestones, commercial companies rely on the ability to thoroughly and informally negotiate a contract to determine fair and reasonable prices. According to a contracting specialist at a



reputable consulting firm, negotiation savvy is imperative to establishing fair prices. "We establish price by straight up, open negotiation. So, it is a matter of how much the client is comfortable paying. How badly do they want this thing? They usually want it but it can be extremely expensive. So we calculate internally how much of a break we can give the client. R&D pricing is basically a matter of loose compromise and negotiation."

Further describing a specific relationship between his firm and a large biotechnology firm, the employee was quoted as saying, "So we came up with an offer of say X-million dollars and they came back and said, 'Look, as you know we are a large company, but you are dealing with a specific department on a limited budget, so we can't afford that, but honestly you have worked with us before and this is what we can spend.' So we scratched our heads and told them that this research requires some sort of investment and we'll do it if we retain the rights for the technology." Ultimately, the business relationship is governed by a sense of openness and negotiation that is not found within the DoD.

Program managers, or the equivalent, within the commercial world are given considerable latitude to make decisions about contracts and carry out those decisions to save money or increase profits for the parent company. An expertise in business negotiation and the freedom to make decisions aid the program manager for research and development contracts in determining the ultimate value adding potential of a specific project. Negotiating the initial contract and negotiating changes in the

contract throughout the life cycle of a program are important components of successful business operations. "If we see a red flag, we react to it," claims one commercial contractor. "In our negotiations, we try to promote understanding and align expectations." Without personnel trained to negotiate the more complex aspects of research and development contracts and the freedom to negotiate such contracts, commercial companies would be faced with frustrating circumstances similar to what currently face the DoD.

Recommendations

As a result of the major findings within commercial industry with respect to the manner in which commercial companies establish the equivalent of fair and reasonable pricing in their commercial operations, it is recommended that the DoD initiate internal reform. Specifically, the DoD should focus upon:

- 1. Developing a technical pricing expertise**
- 2. Training a cadre of negotiating experts**

Technical Pricing Expertise

There is a relatively common belief among commercial firms that the individuals within government tasked to handle research and development contracts lack pricing savvy with respect to commercial counterparts. According to a report released by the General Accounting Office, "Recent commercial prices paid by some DoD contracting officers may reflect insufficient training or a lack of understanding of what

constitutes good price analysis in a sole-source environment.”¹⁵ In addition to comments put forth by the GAO, the commercial representatives that we interviewed throughout the research process had similar estimations about the ability of government contracting officers to price in a sole-source contract. According to one source, government, contracting officers were exceptional when it came to pricing production, but when it came to pricing research and development, contracting officers lacked the experience and technical expertise to price the service in a fair and reasonable manner.

The solution to such a situation lies in more training for the contracting officers assigned to such contracts. If the DoD hopes to attract commercial companies to engage in joint research and development type contracts, the contracting officers assigned to the contracts must be as savvy as their commercial counterparts. As described throughout our interviews, commercial firms were only willing to engage in R&D relationships with other commercial firms if the buyer was sophisticated enough to purchase the R&D. Research and development is different than any other type of commodity, but in pricing the contract for R&D ventures, suppliers of R&D services mandated that the buyer of such service possess similar abilities to price R&D. Commercial companies require

that research and development partners been seen as capable peers.

This requirement forces buyers, like the DoD, to engage in considerable market research with respect to labor rates. If the DoD hopes to attract commercial companies to engage in R&D efforts, DoD contractors must have access to internal databases and have proper training concerning the use of such databases.

According to one source, government, contracting officers were exceptional when it came to pricing production, but when it came to pricing research and development, contracting officers lacked the experience and technical expertise to price the service in a fair and reasonable manner.

The construction of such databases assigned to test the reasonableness of R&D labor rates is no easy task. It will require considerable cooperation between the DoD and other commercial companies. However, if the DoD is able to tap the pricing methods of commercial firms it will be better postured to train its individuals to engage

in future R&D contracts. Without a technical understanding of R&D labor rates, government contractors will not be able to effectively negotiate sole-source contracts.

In addition to this understanding of labor rates, the DoD would also benefit from the commercial practice of establishing milestones and making decisions about future development costs based upon those explicit milestones. This would imply that program managers and contracting officers alike must understand the potential benefit of a project and determine the value of that contract based upon progress. Research and development does not always yield results in a timely manner. However, the DoD must determine its commitment to the project and the commercial

¹⁵ Saldarni, Katy. “Report: Defense Buyers Lack Shopping Savvy.” GovExec.com, June 29, 1999.

contractor based upon the importance, synonymous with the commercial sector's view of "profitability," of the R&D product. Without an adherence to milestones associated with project importance, it would be difficult for the DoD to determine a fair and reasonable price or determine a fair and reasonable amount of labor hours to devote to the program.

The DoD has made considerable gains with respect to the commercial pricing of tangible commercial items. If the government wishes to attract non-traditional defense contractors it must begin to view research and development as a commercial item in and of itself.

Train a Cadre of Negotiating Experts

As mentioned above, if the DoD does not have a firm understanding of R&D labor rates it cannot hope to effectively negotiate sole-source R&D contracts. The two elements, technical expertise with regard to labor rates and a trained cadre of negotiating experts are not mutually exclusive. The DoD cannot hope to effectively master the practice of fair and reasonable pricing without a combination of the two skills.

"As a result, training for contract officers should be intensified until price analysis and negotiating skills improve, GAO recommended. DoD's current training efforts 'have yet to be fully understood

or embraced,' GAO said."¹⁶ The lack of training with respect to negotiating skills is a source of frustration for many commercial companies. Commercial, "employees also felt that some contractors are too difficult to negotiate with due to their status as sole-source providers."¹⁷

Training of contractors in the methods of effective negotiation techniques is difficult to prescribe as an exact science, but according to best practices as employed by commercial firms, it is necessary if the DoD wishes to mimic and make use of the methods employed by commercial firms. "You need articulate people, abstract thinkers, people with integrity, people that are good at talking with other people and people that possess a level of technical expertise about the program," says one commercial employee describing what his company looks for in its employees with respect to negotiating skill. In the end, negotiation savvy represents the backbone of commercial practices ascribed to by non-traditional defense contractors that engage in research and development type contracts.

According to Mr. Terry Little, current director of the newly formed Air Force Acquisition Center of Excellence, "Do not use

development costs as a discriminator... rather, sit down and work out program

"Do not use development costs as a discriminator... rather, sit down and work out program and price issues with the contractors beforehand and look at larger, generally more relevant and important issues of price and production and operations and strategy, performance of the company in the past, and possible performance and capabilities of the product as the major determining factors in selection."

¹⁶ ibid

¹⁷ ibid

and price issues with the contractors beforehand and look at larger, generally more relevant and important issues of price and production and operations and strategy, performance of the company in the past, and possible performance and capabilities of the product as the major determining factors in selection." In order to adequately adopt these recommendations, the DoD must make sure that its contracting officers are properly trained in methods of negotiation.

Program managers that understand business practices within the commercial world are fundamental to the success of potential R&D contracts. In addition to negotiating an original price, program managers should be well versed in the ability to evaluate and negotiate the future life cycle of a specific program. To quote Mr. Little again, "Finally, what else needs to be fixed in the defense industry is our practice that once a program gets going it never stops. We cannot be afraid to kill an unprofitable program. It happens in the civilian world. For example, in the drug industry they assess where they are in a project or program's life cycle, neglecting what has been invested so far...but rather on what it would take to get over the hump and be successful and what type of returns this would mean. Neglect sunk costs."

Training requirements for this aspect of contracting might ultimately result in an additional expense for the DoD, but the benefits that are sure to come from better trained, savvy buyers will outweigh the extra costs associated with such education expenditures. Without proper training with respect to commercial business practices, program managers and contracting officers cannot hope to

flourish in increasingly commercial world.

Question: What are the barriers to entry and what reforms are necessary to attract more non-traditional commercial companies to the DoD acquisition system?

Major Findings

The second part of our focus, as prescribed by the DoD, tasked the research team to investigate aspects of the DoD/commercial relationship that might prove responsible for dissuading non-traditional, high-tech firms from doing business with the DoD. Essentially, what can the DoD do to attract the non-traditional companies to the DoD acquisition system? In answering this question we found that the commercial firms interviewed had a variety of responses, but two common themes, intellectual property rights and DoD contract participation conditions, pervaded the way in which commercial companies do business and characterized the frustrations towards the DoD system.

First and foremost, intellectual property rights are a major concern for any commercial company. Intellectual property and patent rights are today's commercial capital. Without securing the rights to intellectual property, any advancement that is realized by a commercial firm is subject to duplication on the part of other competitors.

Commercial firms dedicate an enormous amount of time, energy and resources to the funding of research and development projects that are likely to produce new

and profitable intellectual property. Traditional defense contractors, however, do not appear to have been as successful as non-traditional firms in efforts to fund research and development. "In 1998, the top five defense contractors received a total of 579 U.S. patents. In contrast, the top three "integrated dual-use companies" (IDCC) – IBM, Motorola, and Kodak – received a total of 5,187."¹⁸ Most R&D is taking place in commercial firms and intellectual property concerns are an important aspect of that fact.

*"In 1998, the top five defense contractors received a total of 579 U.S. patents. In contrast, the top three "integrated dual-use companies" (IDCC) – IBM, Motorola, and Kodak – received a total of 5,187."
– Richard Kuyath*

A government study published in October of 2001 entitled, "Intellectual Property: Navigating Through Commercial Waters" has been groundbreaking in its efforts to address these issues, but according to interviews conducted throughout the research process, "intellectual property rights are definitely a concern."

The Bayh-Dole Act of 1980 was successful in allowing commercial firms the ability to retain the rights to intellectual property, but according to an article written by Diane M. Sidebottom

¹⁸ Kuyath, Richard N., *The Procurement Lawyer: Barriers to Federal Procurement – Patent Rights*. Fall 2000, pg. 11

in the Winter 2001 publication of the *Public Contract Law Journal*, "Commercial companies are now concerned with retaining sufficient intellectual property rights to justify spending the large development funds necessary to get their invention into the marketplace. Furthermore, they are concerned about keeping their inventions' unique and valuable aspects as confidential as possible."¹⁹ Commercial firms are forced to make a decision between pursuing a patent or maintaining a trade secret if the firm is interested in doing business with the DoD.

The establishment of trade secrets is more attractive to commercial firms than the comparatively expensive and time-consuming process associated with patent protection. According to the current language of the Bayh-Dole Act, the measure, "does not allow the option of choosing to retain the invention as a trade secret."²⁰ The requirements associated with the establishment of patents as opposed to trade secrets are non-negotiable and, "for companies whose corporate intellectual property strategies involve trade secret retention, these requirements often will be a deal breaker."²¹

The investigation of intellectual property rights and the specifics associated with the integrity of trade secrets in contrast to the patenting of inventions are topics worthy of independent research. However, in the course of our own

research it proved a common focus of informal discussion and an aspect of the DoD/commercial relationship that cannot be ignored as a significant barrier to entry.

In addition to intellectual property rights, the very nature and process associated with doing business with the DoD with respect to the nuances of government contracting stand as significant barriers to entry and overriding deterrents to non-traditional defense contractor involvement in the R&D process.

It is perhaps best to classify the overall feelings of frustration with the DoD system as a general dissatisfaction with contract participation conditions. Such stark differences exist between business practices and standards as required by government statute, that many commercial firms are hesitant or unwilling to do business with the DoD. In the words of one senior manager at a reputable commercial consulting firm, "The process is long, very long."

Specific aspects of government contracting such as formality, regulatory requirements, auditor access, and recovery clauses for overpayment on the part of the DoD are characterized as impediments to the potential business relationship between commercial firms and the DoD.

As described by a purchasing employee at a large commercial firm, "Working with the DoD is such a hassle. Administrative hurdles, time reporting requirements and paperwork keep us from doing the jobs associated with research and development that we are designed to do. We have employees that wear white coats to work. The DoD

¹⁹ Sidebottom, Diane M., "Updating the Bayh-Dole Act: Keeping the Federal Government on the Cutting Edge". Vol. 30, No. 2, Winter 2001, pg. 238.

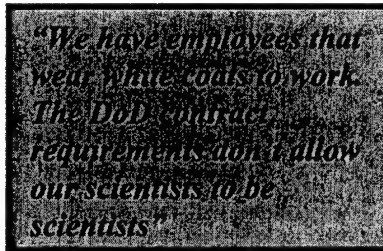
²⁰ *ibid*, page 239.

²¹ *ibid*, page 239.

contract requirements don't allow our scientists to be scientists." Another employee at the same firm succinctly put the frustrations with DoD contract participation conditions into light. "National interests are fine, but everyone prefers to do something besides government work unless we have lean times."

A contracting employee at another large, high-tech firm put forth another frustration with respect to DoD contacts and the conditions associated with participation, "With the responsibility that you incur typically on [government]

R&D efforts, you are looking at going outside the commercial box and attitude as far as pricing. If they [commercial industry] are forced to have cost type ramifications it immediately says that they have to change some sort of the organization and they will have to hire a new set of people and the price will go up." By participating in the normal DoD contract framework, many commercial firms are forced to develop a new set of skills to manage the DoD contracts or firms are forced to create a new business unit to properly oversee the execution of a DoD contract. Unfortunately, this requirement is not always conducive to the strategic goals of commercial firms. The profits from a potential contract with the DoD are not always sufficiently attractive to commercial firms to warrant the establishment of new internal organizations trained to conduct business with the government. For some smaller commercial companies, the costs are simply outside the bounds of normal capacity. For other larger firms, the time and effort associated with such contracts are not worthwhile.



"We have employees that wear white coats to work. The DoD contract requirements don't allow our scientists to be scientists."

However, when the DoD is willing to operate outside the normal structure of a government contract, most commercial firms are quick to engage in business operations. An employee in a large research oriented firm described a situation in which a consortium of commercial companies was interested in doing business with the DoD.

According to the employee, one firm in particular was wholly unwilling to open all of its research and development units to the DoD in the normal framework of

government contracting. "The [company] said if you come to us with a traditional contract, only a limited number of our business units will work on it. With a different type of contract, the DoD will have access to all of our research and development units and all of our state-of-the-art technology."

Currently, the commercial research and development industry is healthy enough to reject DoD contracts in favor of more profitable and less stringent commercial relationships. It is likely that this trend will continue to occur into the foreseeable future. As is such, the DoD must alter its business operations if it wishes to retain access to advancements in technology.

Recommendations

The barriers to entry described above must be addressed if the DoD acquisition system hopes to attract non-traditional defense contractors. The effect of these barriers on small businesses is especially disheartening. "No small company can

afford the apparatus to deal with current government procedures,” said Kenneth P. Morse, managing director of MIT’s entrepreneurship center. “If you want to make this call to action work, the government has to change its own procedures.”²²

Changing procedures within the DoD framework is not an easy task.

Regulatory and structural rigidities are difficult to reform within the context of a bureaucracy. However, two options available and attractive to the DoD are the use of contract types known as other transaction agreements and “pilot programs.”

“No small company can afford the apparatus to deal with current government procedures” – Kenneth P. Morse, managing director of MIT’s entrepreneurship center.

Use of Other Transaction Agreements and “Pilot Programs”

Commercial, non-traditional defense contractors, by and large, are partly dissuaded from engaging in business relationships with the DoD as a result of time consuming, stringent contract participation conditions. The very system in which these commercial companies are forced to operate stands as a barrier to entry. As is such, many proponents of reform recommend that the DoD employ a more liberal use of other transaction agreements and pilot programs. According to Mr. Richard Kuyath, “Other transaction (OT) agreements are exempt from the statutes and regulations that have forestalled commercial companies from doing federal government business. As a result, DoD can issue OT agreements to

commercial companies who in turn can use their own commercial accounting and other standard practices when performing government funded R&D work.”²³

Most relevant to issues of contention stemming from intellectual property rights, OT’s allow commercial firms the ability to keep an invention as a trade

secret and allow commercial firms the opportunity to market a product free from government licensing for five years after the contract is completed, to name a few provisions of

an OT.²⁴ Again, according to Mr. Kuyath, the DoD contracting personnel often seem reluctant to use the OT authority.²⁵ Instead, most contracts within the realm of DoD applications are managed as traditional procurement contracts. This practice of using the traditional format associated with normal procurement contracts dissuades non-traditional defense contractors from participating in DoD R&D projects.

“OT agreements with commercial companies will also enable the use of commercial accounting and other commercial practices when performing DoD-funded R&D,” claims Mr. Kuyath.²⁶ As highlighted in the previous sections, compliance with DoD specific cost accounting standards and expensive government oversight are significant

²² “Technologies Against Terrorism.” *Boston Globe*, October 27, 2001.

²³ Kuyath, Richard N., *The Procurement Lawyer: Barriers to Federal Procurement – Patent Rights*. Fall 2000, pg. 17

²⁴ *ibid*

²⁵ *ibid*

²⁶ *ibid*

barriers to entry for prospective commercial partners.

In regards to the commercial interpretation of OT agreements, one commercial employee at a large commercial research and development organization was quoted as saying, "There is a relatively new concept called OT agreements that DARPA and other research organizations use. The Navy uses them fairly frequently. Basically, in an OT agreement, you can negotiate any sort of terms that you wish as long as they are deemed legitimate. For this kind of work [R&D] I feel that OT agreements are really important and ought to be used more."

If the DoD were to take advantage of its ability to exercise OT authority, it is likely that a number of commercial companies that are hesitant to do business with the DoD would open up to more R&D partnerships. Without greater flexibility in the handling of commercial contracts, the DoD is likely to remain a partner with whom many commercial companies are unwilling to interact.

In addition to the benefits associated with intellectual property and accounting standards that a more liberal application of OT agreements would foster, the DoD would also benefit from a more liberal application of so called "pilot programs." Defense Acquisition Pilot Programs (DAPP's), free from the normal requirements of government contracts, enable DoD teams to better utilize commercial practices and allow for freer management of the development and procurement process. DAPP's, "are provided expedited deviation authority from the

FAR/DFARS and the DoD 5000 series regulations."²⁷ Essentially, such programs are allowed to, "issue a commercial-like contract and authority to streamline the milestone review process and reporting procedures through expedited waivers."²⁸

An excellent example of a success story with respect to the application of pilot programs was evident in the Joint Direct Attack Munitions (JDAM) procurement of the mid-1990s. While the procurement was carried out with a traditional defense contractor, the lessons learned from JDAM's role as a pilot program are highly applicable to R&D type contracts. JDAM's pilot program status allowed for open communication between the DoD and commercial teams. Free from normal government contract conditions, the individuals working on the JDAM program were allowed to act "commercially." According to Oscar Soler, the eventual successor of Terry Little as program manager for the project, "We were there day to day, shoulder to shoulder, hand to hand as part of one team effort... We told our people: instead of waiting for a submission... go out and be part of the team. Don't point out problems, instead solve them."²⁹

JDAM's success as a pilot program is evident in the numbers. "McDonnell Douglas team's final proposal included an AUPP between \$14,000 and \$15,000 (from an original cost target of \$40,000 and original cost estimate of \$68,000).

²⁷ Ingols, Cynthia "Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM)," May 1998

²⁸ *ibid*

²⁹ *ibid*

The JDAM team reduced its research and development costs from \$380 million to \$310 million, and shortened the development program length from 46 to 30 months. The total procurement cycle was reduced from 15 years to 10 years, while the product actually improved on original accuracy requirements."³⁰ JDAM is proof that a pilot program, focused on commercial practices, can meet project requirements and is proof that the DoD can operate under more commercial conditions.

Commitment to the use of pilot programs and a more liberal application of the authority to include purely R&D efforts will allow the DoD the opportunity to hone its commercial skills. Assuming that the DoD is willing and able to procure R&D in this manner, it is likely that more non-traditional defense contractors would be more willing to engage in partnerships with the DoD. Without contract types that allow more freedom from the normal requirements of government procurement, such as OT agreements and pilot programs, many in commercial industry seem unwilling to work with most government agencies.

³⁰ *ibid*

Question: How do commercial companies establish and foster long-term, cooperative supplier relationships with respect to research and development/high-tech application contracts?

Major Findings

The third part of our focus, as prescribed by the DoD, tasked the research team to investigate how the commercial world fosters cooperative, long-term relationships. As highlighted in our background section, the DoD is often seen as promoting a more adversarial, rather than cooperative buyer/supplier relationship. As one former high ranking military officer and current senior employee at a major hi-tech applications firm claims, "According to the sales force that sells to the DoD, I see in (my company) a frustration that they have the answers but the DOD won't listen...everything from Mil-Specs to customer relationship management and a lot of these potential solutions are questioned."

In particular, a twenty-year employee for a reputable research and development/hi-tech applications firm characterized his recent experience with the DoD as a "one-night stand," drastically differing from the typical commercial contracts with which he had grown accustomed. For example, in a recent sole-source, R&D contract for a large commercial pharmaceutical company, his firm was tasked to develop an extremely complex neurosurgery system. However, neurosurgery was

outside the realm of the firm's specialty. The firm lacked the technical expertise and savvy. This lack of specialization, which is common to most military contracts, was easily overcome by forming a panel of subject matter experts (surgeons, doctors, nurses, and healthcare managers) to assist and work directly with the program managers, on an equal level, as associates. In particular, he contrasted this example to the typical military contract experience by stating "the key to success was establishing close-relationships between the subject matter experts and the program managers that involved daily conversations and weekly face-to-face meetings, much like what an integrated product team attempts to do." Also, he indicated there was less oversight and

that his company was in charge of the sub-contractors, solidifying the establishment of trust amongst contractors.

"...the main benefits have come from the structuring and management of these programs in a manner where buyers and sellers establish and achieve price and performance targets in a cooperative rather than adversarial environment"—RAND 2000

In general, he felt that there was a completely different model employed with sole-source R&D contracts for commercial firms than with the military. Basically, commercial contracts are focused more on a long-term relationship that establishes trust, fosters

information pooling and benefit sharing, and develops close personal ties.³¹

In line with this procurement officer's comments, RAND published a report in 2000 entitled "Cheaper, Faster, Better?: Commercial Approaches to Weapons Acquisition," emphasizing that after a close examination of the DoD's own vastly successful experiences in a variety of pilot programs (Joint Direct Attack Munitions, (JDAM), Wind Corrected Munitions Dispenser (WCMD), and Joint Air-to-Surface Stand-Off Missile (JASSM)) surprisingly the "main benefits of Civil Military Integration (CMI)...have not come from insertion of commercial technologies or the use of dual-use production facilities," but rather "the main benefits have come from the structuring and management of these programs in a manner where buyers and sellers establish and achieve price and performance targets in a cooperative rather than adversarial environment."³²

Further industry interviews and research led us to the Best Practices (LLC) multi-industry study on supply chain management and partnerships done in 2000. In particular, Best Practices profiled a diverse group of supply chain management practices employed by over 150 companies in 31 industries that "have demonstrated effective operating principles and winning strategies."³³

³¹ Beecy, Robert E., *Supplier Selection & Management Report* March 2002, pg. 2

³² Permission Granted from RAND to cite this report: Lorell, Mark, "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000,

www.rand.org/publications/mr/mr1147

³³ "Supply Chain Management and Partnership – A Summary" Best Practices, LLC 10 FEB 2000, www.bestpracticesdatabase.com

The *best practices* or underlying principles of this study were to:³⁴

1. Align supply chain management systems with strategic initiatives and goals
2. Form partnerships with suppliers
3. Certify supplier-partners
4. Employ technology to improve supplier partnerships
5. Refine and enhance manufacturing processes
6. Foster communications between partner organizations
7. Emphasize the mutual benefits of partnerships
8. Strategically adapt and implement a certification partnership process

According to the firms interviewed in our study, and in line with the findings of Best Practices, an overwhelming trend was that the DoD, in most instances, must work on fostering communications between partner organizations in a cooperative rather than adversarial manner. These firms most commonly implied that the military preferred "shallow" supplier relationships (i.e. "one-night stands"). In stark contrast, the study found that world class companies tended to promote "extensive communication mechanisms" through a "plethora of communication tools," in order to foster "deep" supplier relationships.³⁵ These organizations often used "cross-functional, cross-corporate teams," much like the aforementioned subject matter expert team and integrated product teams (IPT), "to promote the exchange of objectives and ideas."³⁶ Furthermore, this study indicates that although "telephone and video conferencing have been used for years, the effective communication of ideas often hinges on personal interaction," indicating the value of informal, as well as formal, communication with suppliers³⁷

³⁴ *ibid*

³⁵ *ibid*

³⁶ *ibid*

³⁷ *ibid*

With respect to these findings the most productive means of communication with suppliers are through³⁸:

1. **Advisory councils**
2. **Conferences**
3. **Problem solving teams**

In addition to taking advantage of these modes of enhanced communications, the top companies frequently mentioned that by co-locating members of their firms “purchasers, designers, engineers and managers” gained a “deepened appreciation for the capabilities, needs, and objectives of their partners and they were able to take this knowledge back to further “enhance the process improvement efforts of each organization.”³⁹ In particular, one large automotive manufacturing firm had 400 engineers co-located on site, which helped to facilitate the “sharing of ideas and a greater mutual understanding of strategies, goals, and capabilities.”⁴⁰ We propose that these efforts on a grander scale may establish more “relationship intimacy” while focusing on specific projects, programs, and strategic relationships than Education With Industry (EWI), the Corporate Fellows Program, and even some Integrated Product Teams (IPTs), or the military equivalents. In conclusion, despite the many extremely successful acquisition reform initiatives, our research has solidified the facts made apparent in the case study on JDAM. In many commercial firms the buyer/seller relationship promoted by the DoD is seen as adversarial and opportunistic while the commercial world establishes a relationship that is more collaborative

and long-term⁴¹. Successful commercial relationships hinge on the ability to establish strategic alliances/partnerships through effective communication and mutual benefit.

Recommendations

“The important elements of a successful supply chain partnership lean toward relational attributes because they are the most difficult to achieve.”
Robert L. Bee, Dan River, Inc. *Supplier Selection and Management Report*

The DoD must combat its “adversarial” image. The lack of trust this reputation fosters constrains the potential for future partnerships and acts as key barrier to entry for many non-traditional commercial firms. In particular, as indicated by many individuals interviewed and outlined in the aforementioned Best Practices study, we feel that the DoD successfully sets a strategy and keenly manages supplier certification, but needs to better nurture supplier relationships (see figure 1). Specifically, the DoD must focus on:

1. **Multi-level frequent (*informal*) communication**⁴²
2. **Establishing, promoting, and advancing technology links**⁴³
3. **Fostering strategic alliances and partnerships over contractual relationships**⁴⁴

⁴¹ Ingols, Cynthia “Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM),” May 1998

⁴² “Supply Chain Management and Partnership – A Summary” Best Practices, LLC 10 FEB 2000, www.bestpracticesdatabase.com

⁴³ *ibid*

³⁸ *ibid*

³⁹ *ibid*

⁴⁰ *ibid*

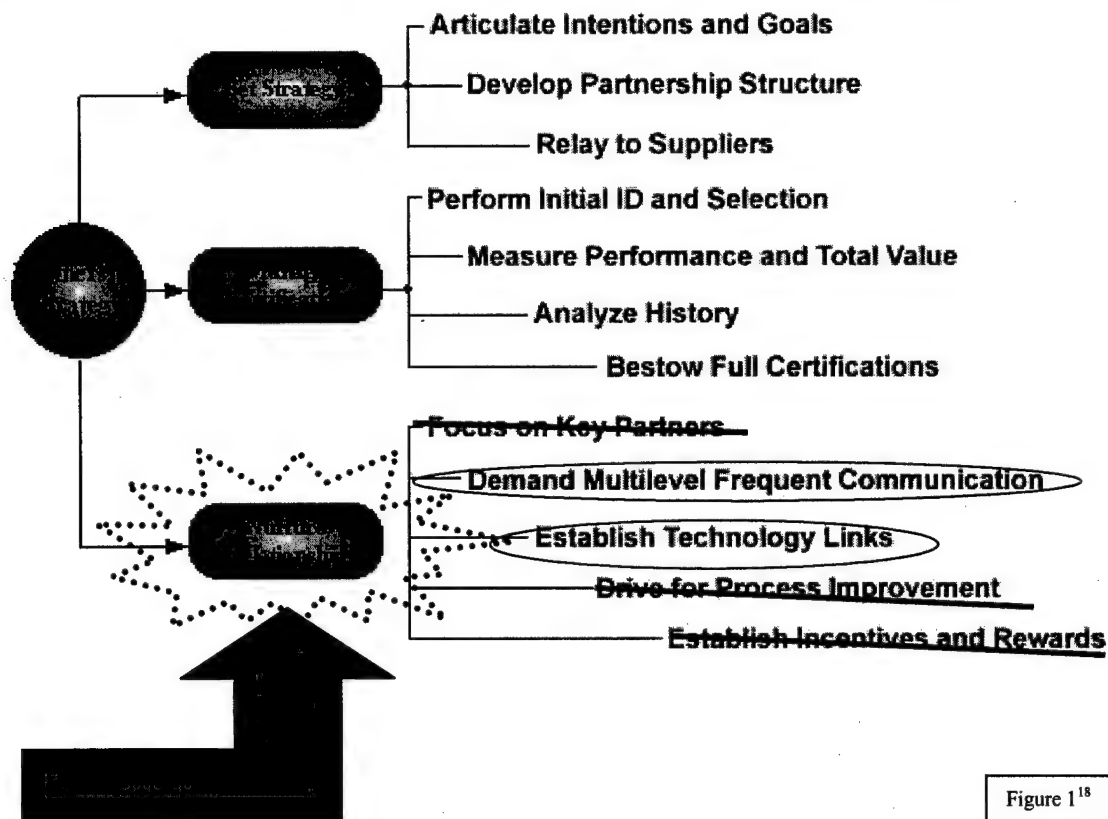


Figure 1¹⁸

Multi-level Communication

The commercial industry has proven that “a successful supply chain partnership will be driven by both formal and informal lines of communication.”⁴⁵ DoD contracts tend to specifically document the formal channels and methods of communication, however this documentation is, at times, burdensome. According to the head of government contracts at a major hi-tech company, the vast oversight and military culture encourages contractors to follow the “letter of the law,” and neglect the true intention or spirit. This practice, promotes “rigidity and inflexibility limiting the autonomy of government contractors and essentially tying their hands,” which causes many to characterize these managers as autocratic, arrogant and uncooperative.⁴⁶

⁴⁴ Eckert, James A. “Best Practice Tips on Building Supplier Partnerships,” www.fita.org/ioma/suppliers.html

⁴⁵ Beecy, Robert E., *Supplier Selection & Management Report* March 2002, pg. 3

⁴⁶ *ibid*, page 4

Although formal communication is necessary, the DoD must instill in young contracting officers the importance of establishing and fostering informal lines of communication. These informal lines promote stronger and longer partnerships by establishing trust and encouraging conflict resolution through the development of close personal ties while avoiding behavior that might cross the fine line of professionalism.

Establish/Utilize Technology Links

In today’s fast paced world, technology is the enabler for and pre-requisite to constant, open and constructive partnerships. Establishing these alliances is critical to breaking down the barriers of an adversarial image. In particular, “almost all world-class companies have electronic links, such as EDI, the Internet, intranets, or extranets, with their partners to eliminate unnecessary steps and free valuable resources.”⁴⁷ For example, one major hi-tech corporation credits the creation

⁴⁷ *ibid*

of an extranet with increasing “electronic intimacy” by establishing a “shared area for strategic corporate accounts, a place for collaborative work, training, issue resolution, forum discussions, and publishing of presentations and documentation.”

Although the DoD is doing a great job, they may not be fully capitalizing on the numerous advantages of e-solutions. For example, a former U.S. Army Colonel and current senior employee of a database applications firm stated “there is a tradition of creating proprietary solutions in the DoD,” specifically “as you may know, software being implemented today on the desktop is

military owned.” The problem with this is that “there is this *culture* that believes that nothing produced in the commercial software world is good enough, looks enough

like, or smells like the DoD equivalent and therefore there is this requirement to go out and create it yourself. This whole attitude is aided and abetted by those organizations that make a living today on maintaining that Government owned software or creating new government owned software. In a sense, commercial companies are natural oppositions to defense integrators who have prospered for 40 years by writing code for the DoD and only have a future if they continue to convince their partners that they really need to write and own their own code, even if it is something as simple as ordering airline tickets and staplers or other simple e-solutions. It is utterly ridiculous!” For example, a Secretary of Defense corporate fellow for a large technology database application firm explains that

“There is this *culture* that believes that nothing produced in the commercial software world is good enough, looks enough like, or smells like the DoD equivalent and therefore there is this requirement to go out and create it yourself.” —Senior Manager of a Hi-tech Database Applications firm

industry has been using an extremely sophisticated e-travel system since 1998 that would mesh perfectly with the Joint Travel Regulations (JTR), but the DoD has refused to use the “commercial software” and will not have a DoD type system kicked off until 2008.

Ultimately, she feels that this problem is a direct result of “the huge degree of mistrust...at the middle and higher level of the Department,” stemming from poor communication.

In the end, it is a vicious cycle.

Technology enables critical communication, collaboration and cooperation that in turn promote trust.

This trust is necessary to establish stronger, deeper, and more cooperative supplier

relationships. However, due to the apparent mistrust and misconception of hi-tech firms, already widespread in the DoD, procurement officers are either unable or unwilling to approach non-traditional defense contractors to capitalize on strategic advantage in e-solutions. Ultimately, the best technology is not available for military use and an adversarial relationship continues to persist.

Despite contrasting comments from both-sides about responsibility, establishing and fostering further electronic integration with strategic suppliers promotes a win-win solution for both parties involved and should *continue* to be a top priority for the DoD. The DoD must openly seek out commercial best practices for software

applications that are not military unique. In particular, local efforts at the Massachusetts Institute of Technology Research & Engineering (MITRE) and Draper laboratories, as well as within the Defense Advanced Research Projects Agency (DARPA) must be maintained, mirrored and enhanced to capitalize on commercial best practices that enable communication, foster cooperation, and break the vicious cycle.

Foster Strategic Alliances

According to James A. Eckert, assistant professor of marketing and supply chain management at Northeastern University, there are seven types of buyer/supplier relationships varying in degree of “trust, frequency of interaction, and commitment to the relationship.”⁴⁸:

1. Non-strategic transactions
2. Administered relationship
3. Contractual relationship
4. Specialty contract relationship
5. Partnership
6. Joint Venture
7. Strategic alliance

In particular, many traditional defense contractors interviewed stated that the DoD tends to practice contractual relationships, which “reduce the need for direct communication.”⁴⁹ As a result, managers on both sides must be keenly aware of the “contractual obligations to appropriately address key issues.”⁵⁰ Solidifying this point, a senior contracts specialist for a large computer

applications firm stated that “a few years ago the Navy was interested in having an end of life buy back put in the system” so his firm had to “spend an inordinate amount of time explaining why we were not going to provide cost data, and why the regulation was in place describing that they did not need to.” In the end the situation blew up and “the Navy contracting officer said she would rather buy a damn airplane than a commercial item if this is how the industry did business.” He explained that things have gotten better, but he feels that rigidity is still apparent in the DoD, and that more flexibility is needed. Ultimately, contractual obligations allow an adversarial relationship to flourish between the DoD and its suppliers.

Consequently, the DoD must view supplier relationships more as

“The Navy contracting officer said she would rather buy a damn airplane than a commercial item if this is how the industry did business.”

partnerships and strategic alliances and less as contractual obligations. Contractual relationships and the DoD’s notorious

adversarial reputation promote a government procurement environment prime for contracting “hit-and-runs,” according to some executives in industry. In contrast, in commercial partnerships “trust and commitment must be high,” and such partnerships require “both parties to invest heavily in the relationship to prove their commitment.”⁵¹

Government/supplier partnerships can develop into strategic alliances if/when the DoD develops “negotiation and

⁴⁸ Eckert, James A. “Best Practice Tips on Building Supplier Partnerships,” www.fita.org/ioma/suppliers.html

⁴⁹ Ibid

⁵⁰ Ibid

⁵¹ Ibid

management strategies for each type of relationship and adapts their approach to the unique characteristic of each relationship.”⁵² This is accomplished through extensive relationship management. Also the DoD must analyze current partnerships with respect to the overall goals of the program, goals of other firms involved, and place a strong emphasis on trust, interaction, and communication on a peer level.

⁵² *ibid*

Transition Risk or Reform

As a natural conclusion, the final focus, as prescribed by the DoD, tasked the research team to investigate aspects of risk or risk mitigation involved with our proposed recommendations/reforms. Ultimately, we feel that in an organization as large, diverse, and complex as the DoD it goes without saying that implementing far-reaching major change initiatives, such as those recommended in this brief report, will take time and are inherently risky. Specific to this issue of risk are three questions that still require considerable research to fully answer:

- 1) Can the DoD transition to a more commercial way of doing business?**
- 2) If the DoD embarks on this journey of reform, will there be a supply of hi-tech, military specific R&D to meet the demand?**
- 3) Is it solely the responsibility of the DoD to reform and change the way it does business?**

In this conclusion we will consider the risks involved with each of these issues, summarize our past recommendations, and offer a road ahead.

1. Transition Risk

A common question posed throughout our study stemming from a general observation that "there has been a lot of talk, and not enough action" with respect to DoD acquisition reform initiatives is:

Given vast cultural, and structural rigidities, can the DoD transition to more commercial ways of doing business?

A) DoD Unique Transitional Challenges

As a corporate fellow at a major hi-tech firm was quick to point out "the DoD does not perceive itself nor does it operate as a corporate entity, instead it is a group of tribes and is ruled by tribal law." The DoD as an entity is comprised of multiple, stove-piped organizations. As is such, it would appear as if the does not always successfully leverage "its bigness in contracts." This lack of cohesion directly correlates to a difficulty with and resistance to uniformly implemented change.

Another well-seasoned commercial executive at a hi-tech firm succinctly summarizes the pessimism of some commercial firms by stating that the impediments to reform are "primarily cultural. There is a spirit of Teflon leadership that has grown up in DoD where no one actually has responsibility for a program for more than 24 or at the most 36 months so no one is truly accountable." In stark contrast, he adds, my company "has had the same CEO for over 24 years and we have just recently changed, (in my company) what would be equivalent to your MAJCOM commander. That gentleman was in place for over 10 years." Ultimately, the executive feels that "you have a much more permanent workforce that is

directly compensated for the quality of their decisions from a cultural standpoint” in the civilian world.

Finally, as highlighted in the RAND study and indicated in numerous interviews, critics “reason that the DoD’s unique mission requirements and substantial political constraints make ‘commercial business practices,’ whether interpreted as ‘textbook’ or ‘best,’ unsuitable for DoD.”⁵³

Furthermore, some critics also feel that given the current military environment, “complete elimination of such features as Mil-Specs, detailed contract requirements, and extensive governmental oversight removes necessary protections against waste, fraud, and abuse of taxpayer money.”⁵⁴

In particular, as implied by one government contracting executive at a commercial consulting firm, the structural rigidities are difficult if not impossible to overcome simply because “the government is really held to a higher standard and they must/ought to be, but it just really constricts them.”

Many policymakers feel that when public money is involved, transparency and oversight are lasting bedfellows.

B) Rise to the Challenge

Despite these reservations, we feel that the DoD *can*, should and must transition to become a “world-class customer---and its suppliers world class suppliers---by adopting business practices

characteristic of the very best commercial firm.”⁵⁵

First, to transition, the DoD as a whole must attempt to foster more cohesion among the competing entities of the DoD. As one corporate executive states, “seeking the vision, going for it, and implementing it along with change guidelines.” In particular, these change guidelines highlight that: 1) Change begins at the top, 2) It is the responsibility of the executives to lead change through communication, and 3) A firm must communicate change by “telling it, not selling it.”

Secondly, just as the force structure and composition of the military are ever changing, the potential for cultural change is also available within the near future. In particular, we agree with Dr. Marvin Sambur, that despite current cultural rigidities within the DoD, “real culture change is possible because of a projected 50% personnel turnover in the next 5 years.”⁵⁶ Ultimately, the DoD has the opportunity to start early and “identify, train and sustain a generation of innovators.”⁵⁷

Finally, the phenomenal successes of programs such as JDAM, JASSM, and AMRAMM “placed acquisition reform in the hands of good leaders,” resulting in not only a successful transition to better business practices, but also “in a 30 percent or better reduction in purchase price, and a projected reduction

⁵³ Permission Granted from RAND to cite this report: Lorell, Mark, “Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition” 2000,

www.rand.org/publications/mr/mr1147

⁵⁴ *ibid*

⁵⁵ Via RAND, Perry, William, “Specifications and Standards: A new Way of Doing Business,” Memorandum, from the Secretary of Defense, 29 June 1994.

⁵⁶ Dr. Marvin Sambur AQ Call 29 Nov 2001 HQ US Air Force

⁵⁷ *ibid*

in lifetime ownership cost.”⁵⁸ In a recent interview, Mr. Terry Little said, “There are a lot of people in the Department who want to say the jury is still out, or even that it’s failed – Maybe most people. I don’t believe the jury is out. We have three good examples of acquisition reform programs. The results are going to continue to be drastically different from previous programs.”⁵⁹

2. Supply-side Risk

With respect to R&D and hi-tech applications, our client is concerned that: *If the DoD embarks on this journey of reform will there be a greater supply to match demand?* From our interviews, there is an overall consensus that the reforms are inherently good for the DoD, but the likely increase in business from non-traditional hi-tech/R&D firms is difficult to determine.

“Nobody pretends that company A is cooperating with company B because it is the good thing to do and they like each other...it is for the bottom line”

A) Are These Reforms Enough?

Most of the interviewed firms overwhelmingly agreed that reforms are necessary. Reforms would enhance the DoD procurement process and make it more efficient and effective. However, many commercial firms were still concerned with barriers tied to *profitability*. For example, a former U.S. Army Colonel and current senior employee of a database applications firm

stated, “that these reforms would be useful from the DoD’s perspective. They would streamline DoD processes, but streamlining DoD’s processes would not encourage commercial corporations to further R&D relationships with DoD as long as the restrictions remain on ensuring profitability of those relationships.”

In particular, an R&D employee at a major consulting and database management firm said “even though on an individual basis we were very successful in government work or research, that research was leading us further and further into a more academic kind of world. And that had no bearing on the software market. So in a nutshell it is difficult to commercialize the software applications that the government wants/needs...in the end software engineering

initiatives or agendas are more decided by companies like Microsoft and what not, rather than government research.” In government work, the lack of profitability stems from, as the Colonel put it, “the inability to take the R&D money and sell it commercially.” In the end, commercial firms tend to shy away from doing business with the government because they are “in it for the money and nobody pretends that it is anything else. Nobody pretends that company A is cooperating with company B because it is the good thing to do and they like each other...it is for the bottom line,” and if the reforms do not directly effect profitability, the reforms will not attract more non-traditional R&D firms.

⁵⁸ Alder, Reuel S., “Quality Leadership is the Foundation for Successful Reform,” *Crosstalk* November 2001, www.stsc.hill.af.mil/

⁵⁹ Alder, Reuel S., “Quality Leadership is the Foundation for Successful Reform,” *Crosstalk* November 2001, www.stsc.hill.af.mil/

B) The Reforms Create a Supply

We agree that without focus upon profitability reforms, DoD work remains somewhat unappealing for many non-traditional defense contractors.

However, we feel that the recommendations posed in this report will positively affect the normal costs of doing business from a commercial standpoint and help foster a more mutually beneficial relationship between commercial industry and the DoD.

According to a detailed analysis of industry compliance costs by Coopers and Lybrand (C&L) and TASC (1994), "on average the DoD paid a regulatory cost premium of 18 percent."⁶⁰

Transitioning to a more commercial way of doing business could help to erase this cost premium. In addition to being passed on to the government, these cost savings could also be passed along to contractors in the form of more commercial like return on investment (ROI).

Many non-traditional, hi-tech firms would be willing to do business with the DoD if they would transition to a more commercial way of doing business. In particular, when asked if less oversight by the DoD would create a much larger supply and more willingness to do business with the department, a government accounts director for a hi-tech consulting and database applications firm stated, "I do, yes...well *absolutely*. My company is willing to do business with the government, we want all the government work we can get, but

the acquisition rules get in the way."

Without these rules many companies such as his would open up their laboratories, furthering their military specific R&D initiatives and overall business relationships with the DoD. Multiple firms are interested in more business relationships with the DoD. For example, the Integrated Dual-use Commercial Companies (IDCC) organization, comprised of member firms like Corning Incorporated, Dow Chemical Company, Dow Corning Corporation, W. L. Gore and Associates, Inc., Eastman Kodak Company and Honeywell, is dedicated to the following goals:

- To encourage and monitor the implementation of Federal Acquisition Reform legislation, regulations and practices that eliminates unnecessary and counterproductive requirements on member firms.
- To benchmark and share knowledge regarding government R&D contract activities to increase the effectiveness and efficiency of these operations.
- To promulgate public policy statements regarding Federal Government R&D.⁶¹

Organizations such as the IDCC are only the beginning. We conclude, that despite some valid profitability concerns, reforms will result in an increased supply of R&D/high-tech applications from both non-traditional and traditional defense contractors.

⁶⁰ Permission Granted from RAND to site this report: Lorell, Mark, "Cheaper, Faster, Better? Commercial Approaches to Weapons Acquisition" 2000, www.rand.org/publications/mr/mr1147

⁶¹ www.idcc.org/goals.html

3. Responsibility of Reform Risk

Ultimately, the DoD must make the worthwhile transition to more commercial business practices, but the DoD should not bear all of the risk and not be held solely responsible for reform efforts. As a former U.S. Army contracting officer and current senior employee at large computer firm states, "reforms have to happen, there is no question to that, but the responsibility does not lie solely within the military. It is a two-way street...not 50-50 though instead it may be a two-way street with 3 lanes on the right and 1 on the left. In essence the military is responsible for 75% of the problem, but the industry is willing, able, and understanding that it must meet them at least 25% of the way."

Commercial firms understand that the DoD is held to a higher standard and must tread a fine line between granting contractors autonomy and requiring oversight in order to protect the public interest. Furthermore, commercial firms realize that if/when the DoD makes an effort to transition that the commercial industry must meet the DoD at least part of the way. The commercial world is able and flexible enough to make this effort.

Ultimately, the flexibility of the commercial world poses a great opportunity for the DoD to utilize some bargaining power. For example, the DoD can make a smaller scale adjustment in the way it does business for reciprocal consideration from

commercial firms. The DoD's size gives it instant leverage.

Finally, some officials within the DoD were concerned that by emphasizing commercial "best practices" and trying to attract non-traditional/hi-tech firms the DoD would jeopardize its valuable relationships with traditional defense contractors. *According to our research, this concern is unfounded.*

A top government contracts official at a major traditional defense-contracting firm felt that reforms aimed at increasing the efficiency with which commercial companies interact with the DoD would not affect their position within the

defense industry, but rather "enhance it." In fact, he went on to state that "the more non-traditional companies do business with the DoD, the more opportunities that defense companies such as (my company) will have in expanding their

subcontractor base, i.e. the same companies will likely be more willing to help companies in the defense industry by providing commercial solutions to our requirements."

Another senior executive at a major traditional military firm stated competition from non-traditional defense contractors is a favorable outcome "as that would mean that the Government has streamlined its procurement practices to the point that it would be an attractive customer to primarily commercial firms. That would enable current DoD contractors to reduce their costs of doing business in the effort to compete with these new entrants." In

"In essence, the military is responsible for 75% of the problem, but the industry is willing, able and understanding that it must meet them at least 25% of the way."

the end, reforms not only help non-traditional defense contractors enter the DoD market, but also bolster the competitiveness of traditional defense contractors. Lower costs and a streamlined process are beneficial to all involved parties.

4. Conclusion: Road Ahead

In this report we have concluded that in order for the DoD to successfully implement and transition to commercial best practices they must:

- 1) Develop a technical pricing expertise and train a cadre of negotiating experts in order to establish fair and reasonable prices in the absence of competition.
- 2) Utilize other transaction agreements and participate in more “pilot programs” to break down the barriers to entry for non-traditional commercial firms.
- 3) Institute multi-level frequent (informal) communication, advance technology links, and foster strategic alliances to diminish the DoD’s adversarial

image in efforts to cultivate deep supplier relationships.

These recommendations are risky, but we have concluded that the risks are worthwhile. The transition to commercial best practices is possible and if the DoD successfully embarks on this journey there will be an increased supply/interest from non-traditional defense contractors in military specific R&D. The responsibility for reform lies with the DoD and commercial industry alike. Importantly, these reforms will not critically tarnish the DoD’s current relationships with traditional defense contractors.

In the end, it is unlikely that reform will take place overnight. It is more likely that reforms will be instituted over time and will face considerable iterations along the way. The findings, recommendations and conclusions presented in this paper are just one step of many that are sure to occur within the government acquisition reform process. Much work remains to be done, but without a sense of urgency and a commitment to fix the system, the DoD will continue to see a divergence between its technical capacity and that of the commercial world.

<http://www.odam.osd.mil/omp/pubs/GuideBook/Pdf/Osd.PDF>

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graph TD
    SecDef[Secretary of Defense] --> DSecDef[Deputy Secretary of Defense]
    DSecDef --> ATSD_Civil[ATSD (Civil Support)]
    DSecDef --> IG[Inspector General]
    DSecDef --> ATSD_Oversight[ATSD (Intelligence Oversight)]
    DSecDef --> GC[General Counsel]
    DSecDef --> ASD_Legislative[ASD (Legislative Affairs)]
    DSecDef --> ASD_Public[ASD (Public Affairs)]
    DSecDef --> DNET[Director Net Assessment]
    DSecDef --> DAM[Director Administration and Management]

    DSecDef --> USD_Policy[USD (Policy)]
    DSecDef --> USD_Comp[USD (Comptroller)]
    DSecDef --> USD_Personnel[USD (Personnel & Readiness)]
    DSecDef --> ASD_Command[ASD (Command, Control, Communications & Intelligence)]
    DSecDef --> DOT&E[Director Operational Test & Evaluation]
    DSecDef --> USD_ATL[USD (Acquisition Technology & Logistics)]

    USD_Policy --> PDUSD_Policy[PDUSD (Policy)]
    PDUSD_Policy --> ASD_Intel[ASD (International Security Affairs)]
    PDUSD_Policy --> ASD_Strategy[ASD (Strategy and Threat Reduction)]
    PDUSD_Policy --> DUSD_TechSec[ DUSD (Technology Security Policy)]

    ASD_Intel --> ASD_Special[ASD (Special Operations/ Low-Intensity Conflict)]
    ASD_Special --> DUSD_PolSupp[ DUSD (Policy Support)]

    USD_Comp --> PDUSD_Comp[PDUSD (Comptroller)]
    PDUSD_Comp --> DPAE[Director Program Analysis & Evaluation]

    USD_Personnel --> ASD_FMP[ASD (Force Management Policy)]
    ASD_FMP --> ASD_HA[ASD (Health Affairs)]
    ASD_HA --> DUSD_Planning[ DUSD (Planning)]

    ASD_Command --> ASD_ResAff[ASD (Reserve Affairs)]
    ASD_ResAff --> DUSD_ProgInt[ DUSD (Program Integration)]
    DUSD_ProgInt --> DUSD_Readiness[ DUSD (Readiness)]

    USD_ATL --> PDUSD_ATL[PDUSD (AT&L)]
    PDUSD_ATL --> DUSD_AcTech[DUSD (Acquisition & Technology)]
    PDUSD_ATL --> DUSD_LogMat[DUSD (Logistics & Materiel Readiness)]
    PDUSD_ATL --> DDirDRE[Director Defense Research & Engineering]

    DUSD_AcTech --> DUSD_Inst[DUSD (Installations)]
    DUSD_Inst --> DUSD_AcReform[DUSD (Acquisition Reform)]
    DUSD_AcReform --> DirSmall[Dir Small & Disadvantaged Business Utilization]

    DUSD_LogMat --> DUSD_IndAff[DUSD (Industrial Affairs)]
    DUSD_IndAff --> DUSD_EnvSec[DUSD (Environmental Security)]

    DDirDRE --> ATSD_NCB[ATSD (Nuclear & Chemical & Biological Defense Programs)]
    ATSD_NCB --> DUSD_ScTech[DUSD (Science & Technology)]
    DUSD_ScTech --> DUSD_AdvSys[DUSD (Advanced Systems & Concepts)]
  
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Appendix B: Questions for Pentagon Interviews

PAE Research at the Pentagon: Questions

The format of this interview is broken down into three sections: 1) PAE relationship and commitment 2) Background information and 3) Problem specific clarification

PAE Relationship:

- 1) We are committed to providing you with a quality and comprehensive product specifically tackling the problem of ascertaining fair and reasonable pricing without reliance on certified cost and pricing data while at the same time gaining valuable exposure to the current and future acquisition process, with this in mind what are your specific expectations from us? (i.e. depth research, time commitment, finished product)
- 2) You have already given us some brief background information, a problem statement, and some helpful feedback on our PAE prospectus given that where do you foresee us adding the greatest value or what is our niche?
- 3) What is our role within the current DoD integrated product teams in relation to PBA? Are we the only ones investigating this specific problem or are working in conjunction with other research teams?

Background Information:

- 1) What has been the most significant acquisition reform in the last 5 years and why?
- 2) Despite a concentrated effort for acquisition reform in the past decade, what currently constrains the acquisitions process in getting weapon systems to the war fighter in a timely and cost effective manner?
- 3) Do you feel that TINA, cost accounting standards CAS, and material management accounting system MMAS are antiquated in regards to the DoD's desire to capture high-tech industry?
- 4) This question in two fold: On December 10 the Air Force opened its Acquisition Center of Excellence or ACE. ACE's primary mission is to help acquisition professionals cut through burdensome unproductive processes. ACE has established six lightning bolts that capture the new reform orientation of the Air Force what is the likelihood of success, of these reform goals, in the current operating environment? Are our regulatory constraints simply too much for reform initiatives such as these to prove successful (i.e. is it too much study and not enough action?)?
- 5) Would you like our recommendations to be DoD or Air Force specific?
- 6) What is our time-line for any policy recommendations that we have the current administration or would acquisition reforms be independent of changes in political administrations?

- 7) In your words could you briefly summarize the push towards evolutionary acquisitions?

Problem Specific Questions:

- 1) What are the requirements for the focusing of our research, are you interested in R&D, hardware, software or everything?
- 2) We are attempting to gather some premonitions that people have before we eventually come to our conclusions, What do you think is the greatest cultural and structural challenge that may face the DoD in implementing PBA?
- 3) Do you feel that implementing PBA will dissuade traditional defense contractors from doing business with the DoD?
- 4) Do you think that the changes that you're considering implementing will succeed in attracting non-traditional defense contractors? If they for some reason do not what is the fall back position for the DoD?
- 5) What analogies do you see between PBA and business relationships in the commercial world?
- 6) Some of the changes that may attract non-traditional defense contractors are structural or regulatory. How do you hope to attract non-traditional defense contractors who are simply afraid of the consequences associated with being non-TINA compliant?
- 7) In addition to some of the companies you listed in your feedback on our prospectus are there other commercial companies that you think it would be worthwhile to investigate? What specific companies do you hope to attract with these changes?

Appendix C: Traditional Defense Contractors

Policy Analysis Exercise – Interview Questions

TO: Traditional Defense Contractor

FROM: Christopher W. Rohe and Benton W. Shrewsbury

SUBJECT: Policy Analysis Exercise (PAE) Interview Questions

DATE:

1. In your estimation, what is the current health of the defense industry?

2. What is your company's impression of Price Based Acquisitions (PBA)? Do you consider it a risky reform for the DoD?

3. How does your company obtain fair and reasonable pricing with the DoD?

4. How does your company achieve fair and reasonable pricing with its own subcontractors?

5. How has your company changed its methods for obtaining fair and reasonable pricing in the face of reforms within the government procurement process?

6. Does your company feel that reforms aimed at increasing the efficiency with which commercial companies interact with the DoD will adversely affect its position within the defense industry?

7. Is competition from non-traditional defense contractors a favorable outcome for your company? Why/Why not?

8. What reforms do you believe are necessary to make the DoD more attractive? Do you believe that these reforms are possible/plausible?

9. Given the nature of our study is there anything that you feel we did not cover adequately?

Appendix D: Contractor's Exiting the Industry

Policy Analysis Exercise – Interview Questions

TO: Contractors Exiting the Industry

FROM: Christopher W. Rohe and Benton W. Shrewsbury

SUBJECT: Policy Analysis Exercise (PAE) Interview Questions

DATE:

1. What are the overarching reasons that your company has decided to decrease operations with the DoD or has chosen to completely withdrawal from a business relationship?

2. If you cannot identify any specific reasons, what were some frustrating aspects of a business relationship with the DoD?

3. What, in your opinion, is the single most important difference between doing business with the DoD and other commercial companies?

4. Did your company ever attempt to affect change within the government procurement process before deciding to withdrawal from the industry?
 - a. If so, what barriers prevented change from occurring and in your company's estimation where does the responsibility lie for reform?

- b. Has the DoD been unwilling or unable to compromise on specific problems that might have encouraged your company to continue its former relationship with the DoD?

- c. Is there anything that the DoD might be able to do within its structure, regulation requirements or culture to attract your company to increase its operations within the defense industry?

5. As indicated in the attached e-mail certified cost and pricing data is required by law for all government cost-based contracts due to the Truth in Negotiations Act (TINA). The purpose of TINA is to establish an equitable relationship between the USG and contractors in contract negotiations by requiring contractors to submit cost or pricing information that might prove germane to costs associated with contract performance. "TINA, as amended, and the implementing procurement regulations require prime contractors and subcontractors to submit cost or pricing data to the USG and to certify that, to the best of their knowledge and belief, the data submitted are accurate, complete and current."¹

In accordance with TINA, cost or pricing information or data includes all facts that buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data is deemed as factual or verifiable. Currently, TINA applies to all negotiated prime contracts expected to exceed \$500, 000 or a modification of a negotiated or sealed bid contract involving a price adjustment exceeding \$500,000, with similar conditions existing for subcontractors working in conjunctions with the prime contractor. Ultimately, TINA compliance is an important aspect of government contracting, where the slightest defect or omission, regardless of intention, is subject to a reduction in contract price or investigation of possible fraudulent activity on the part of the contractor. With all this in mind:

- a. How does your company achieve the equivalent of fair and reasonable pricing in commercial operations?

- b. How does your company ensure that it is not the victim of “price gouging” and profiteering by companies with whom you do business commercially and what aspects of your business practices might the DoD apply to its commercial operations?

8. What reforms do you believe are necessary to make the DoD more attractive? Do you believe that these reforms are possible/plausible?

9. Given the nature of our study is there anything that you feel we did not adequately cover?

Appendix E: Non-Traditional Defense Contractors

Policy Analysis Exercise – Interview Questions

TO: Non-traditional Defense Contractors

FROM: Benton W. Shrewsbury and Christopher W. Rohe

SUBJECT: Policy Analysis Exercise (PAE) Interview Questions

DATE:

1. Has your company ever been approached by the DoD for contracts associated with Research and Development or other high tech applications?

2. Has your company ever **actively** sought a contract, as mentioned above, with the DoD? Why or why not?

3. Assuming your company would like to do more business with the DoD in the realm of research and development or cutting edge technology, what currently impedes such a relationship? What do you deem the barriers to entry?

4. What, in your opinion, is the single most important difference between doing business with the DoD and other commercial companies?

5. Where do you feel the responsibility lies for reform that might make business relationships with the DoD more acceptable? Is it necessary for the DoD to change its regulations/structure/culture or could your company actively alter business practices to engage in research and development with the DoD?

-
6. What has been the greatest deterrent to a possible lack of research and development/high tech operations with the DoD? Do profitability constraints or risk/responsibility associated with DoD contracts dissuade your company from establishing a more involved business relationship with the DoD?
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7. As indicated in the attached e-mail, certified cost and pricing data is required by law for all government cost-based contracts due to the Truth in Negotiations Act (TINA). The purpose of TINA is to establish an equitable relationship between the USG and contractors in contract negotiations by requiring contractors to submit cost or pricing information that might prove germane to costs associated with contract performance. "TINA, as amended, and the implementing procurement regulations require prime contractors and subcontractors to submit cost or pricing data to the USG and to certify that, to the best of their knowledge and belief, the data submitted are accurate, complete and current."¹

In accordance with TINA, cost or pricing information or data includes all facts that buyers and sellers would reasonably expect to affect price negotiations significantly. Cost or pricing data is deemed as factual or verifiable. Currently, TINA applies to all negotiated prime contracts expected to exceed \$500, 000 or a modification of a negotiated or sealed bid contract involving a price adjustment exceeding \$500,000, with similar conditions existing for subcontractors working in conjunctions with the prime contractor. Ultimately, TINA compliance is an important aspect of government contracting, where the slightest defect or omission, regardless of intention, is subject to a reduction in contract price or investigation of possible fraudulent activity on the part of the contractor. With all this in mind:

- a. How does your company achieve the equivalent of fair and reasonable pricing in commercial operations with its subcontractors or business partners?
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- b. How does your company ensure that it is not the victim of “price gouging” and profiteering by companies with whom you do business commercially and what aspects of your business practices might the DoD apply to its commercial operations?

8. If there were less oversight by the DoD do you feel that there would be more of a willingness to do business with the Department? Would less oversight be a mutually beneficial solution?

9. Off the top of your head can you think of any sole-source relationships that you have with another commercial firm that is analogous to the R&D relationship that you or other firms may have with the government? What are the key differences in terms of price analysis requirements and what type of due diligence is required in these relationships? How do you ascertain fair and reasonable pricing?

10. How does your company manage change and work with your suppliers on a long-term basis?

11. What reforms do you believe are necessary to make the DoD more attractive? Do you believe that these reforms are possible/plausible?

12. Given the nature of our study is there anything that you feel we did not cover adequately?

Appendix F: DoD and Commercial Comparison

<http://www.dsmc.dsm.mil/jdam/case/case4.htm>

Ignols, Cynthia "Implementing Acquisition Reform: A Case Study on Joint Direct Attack Munitions (JDAM)," May 1998. Defense System Management College (DSMC).



DoD and Commercial Comparison

	<u>DoD Historical</u>	<u>Commercial</u>
Buyer/Seller Relationships	Adversarial, Opportunistic	Collaborative, Long Term
Buyer Specification	Detailed "How-Tos"	End-Item Performance
Buyer In-Process Oversight	Lots (With Flow Down)	Little (Without Flow Down)
Primary Award Criteria	Technical Promises and Lowest Cost	Past Performace and Best Value
Data and Reporting	Extensive and Formal	Minimal, by Exception and Informal
Basic for Negotiation	Costs	Price
Development Contracts	Cost Type	Fixed Price

Exhibit VII